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INFORMATION REPORT INFORMATION REPORT

CENTRAL INTELLIGENCE AGENCY

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EXPEDITE

COUNTRY	USSR/East Germany	REPORT	
SUBJECT	Soviet Handbook on Electronic Tubes Not: Technical characteristics of electronic Tubes from O to GK-7. ABST	DATE DISTR.	24 July 1962 50X1-HUM
		NO. PAGES	37
		REFERENCES	RD 50X1-HUM
DATE OF INFO.			
PLACE & DATE ACQ.			

THIS IS UNEVALUATED INFORMATION. SOURCE GRADINGS ARE

Comments:

1. English-language translation of the handbook, consisting of 643 pages, and bound in three sections. 50X1-HUM
2. A tabulation of electrovacuum and semiconductor devices appearing in Volume I has been extracted and is attached to this report as an appendix. This tabulation is essentially a complete listing of the devices covered in the five-volume series, except that type numbers for magnetrons are not given. According to the index for the series, given in Volume I, magnetrons are covered in Volume IV. Volumes II through V are not available. For convenience, the tabulation has been rearranged from the original numero-alphabetical listing to a class listing. 50X1-HUM

ARMY	NAVY	AIR	NSA	OCR	DIA	NIC
#X	#X	#X	#X	#X	X	X

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A P P E N D I X

<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
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RECEIVING TUBES

06X6B	-	-
-	06H2B	CK505AX
1A1H	-	1R5; DK 91
1A2H	-	-
1B1H	-	1S5; DAF 91
1B2H	-	-
1X17B	-	-
1X18B	-	-
1X24B	2A-1	-
1X29B	U-2	-
1H2H	-	-
1K1H	-	1T4; DF 91
1K2H	-	-
1H3C	1H1	1G6-GT/G
1H2B	-	CK507AX
1H3B	-	-
1H4B	-	-
1H5B	-	-
1H6B	-	-
1H22B	U'-3	-
1H24B	U-1	-
1C12H	-	DC 96
1H1C	1H1	-
1H7C	-	1B3/8016
1H11H	-	-

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GOST #	Old Types	Foreign Equivalent
2Д1С	ДМ2-10	-
2Д2С	ДМ2-10	LG-16
2Д3Б	2Д3С	-
2Ж14Б	-	-
2Ж15Б	-	-
2Ж27Л	2Ж27	-
2Ж27П	-	-
2Ж28Л	-	-
2П1П	-	3S4; DL 92
2П2П	-	-
2П5Б	-	-
2П19Б	-	-
2П29Л	2П29	-
2П29П	-	-
2С3А	-	-
2С4С	-	2A3
2С14Б	-	-
2Х1Л	2Х1	-
2Ц2С	-	2Х2/879
3Д6А	-	-
3Ж1Б	-	-
3Ж2Б	-	-
3ЛК1Б	-	-
3С6Б	-	-
3С7Б	-	-
3Ц16С	-	3B2
3Ц18П	-	-

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
4Д5С	Д-1-Д	-
4К1Л	-	-
4П1Л	-	-
4П10С	VT-127-D	VT-127-D
4С3С	-	-
4Ц6С	4Д2, 4ЛМ	-
5Ц3С	-	5U4G
5Ц4С	-	5Z4G
5Ц8С	-	-
5Ц9С	-	-
5Ц9С-E	-	-
5Ц12П	-	-
6A2П	-	6BE6; 6H31; EK 90
6A3П	-	6BN6
6A7	-	6SA7
6A7-E	-	-
6A8	-	6A8
6A10С	6A10	6SA7
6B8	-	6B8; VT-93
6Б1П	ЛП-34	-
6Г1	-	6SR7
6Г2	-	6SQ7
6Г3П	-	EABC 80
6Г7	-	6Q7
6Д3Д	ДМ1	559
6Д4Ж	6X1Ж	9004

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
6Д6А	6Д1А	-
6Д6А-В	-	-
6Д8Д	-	-
6Д10Д	-	-
6Е1П	-	-
6Е5С	6Е5	6Е5
6Ж1Б	-	CK5702
6Ж1Б-В	-	-
6Ж1Ж	-	954
6Ж1П	-	6AK5; 6F 32; EF 96
6Ж1П-В	-	-
6Ж1П-Е	-	-
6Ж2Б	-	CK5639
6Ж2Б-В	-	-
6Ж2П	-	6AS6; 6F 33
6Ж2П-В	-	-
6Ж2П-Е	-	-
6Ж3	-	6SH7
6Ж3П	6AK5	6AG5
6Ж4	6AC7	6AC7
6Ж4-Е	-	-
6Ж4П	-	6AU6; EF 94
6Ж5Б	-	-
6Ж5Б-В	-	-
6Ж5П	-	-
6Ж6С	Z-62-D	Z-62-D

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
6X7	-	6J7
6X8	-	6SJ7
6X8-E	-	-
6X9B	-	-
6X9Π	-	EL 80F
6X9Π-E	-	-
6X10B	-	-
6X10B-B	-	-
6X10Π	-	-
6X11Π	-	-
6X13J	6X13	VR-126
6X21Π	-	-
6X22Π	-	-
6X23Π	-	-
6X28B	-	-
6X29B	-	-
6M1Π	-	ECH 81; 6AJ8
6K1B	-	-
6K1X	-	956
6K1J	-	-
6K1Π	-	9003
6K3	-	6SK7
6K4	-	6SG7
6K4Π	6K2Π	6BA6; 6F 31; EF 93
6K4Π-B	-	-
6K4Π-E	-	-
6K7	-	6K7

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
6K9C	6K9M	-
6J7	-	6L7
6H1Π	-	-
6H1Π-B	-	-
6H1Π-E	-	-
6H1Π-M	-	-
6H2Π	-	-
6H2Π-B	-	-
6H2Π-E	-	-
6H3Π	-	2C51
6H3Π-B	-	-
6H3Π-M	-	-
6H4Π	12H4Π	12AV7
6H5Π	-	-
6H5C	6H11	6AS7GT
6H6Π	-	-
6H6Π-M	-	-
6H7C	-	6N7GT
6H8C	6H8M	6SN7GT
6H8C-E	-	-
6H9C	6H9M	6SL7GT
6H9C-E	-	-
6H10C	6H10M	6SC7
6H12C	-	5687
6H13C	-	6AS7GT
6H14Π	-	ECC 84
6H15Π	6H15	6J6; ECC 91; 6CC31
6H16B	-	-

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
6H17B	-	-
6П1П	-	6AQ5; EL 90; 6L 31
6П1П-B	-	-
6П1П-E	-	-
6П3C	6П3	6L6
6П3C-E	-	-
6П6C	-	6V6GT
6П7C	6П7	6BG6G
6П8C	6И6C	6U6GT
6П9	6AG7	6AG7
6П9-E	-	-
6П13C	-	-
6П14П	-	EL 84; 6BQ5
6П15П	-	-
6П18П	-	-
6П20C	-	6CB5
6П21C	ГВ-31	55L6
6П23П	-	-
6C1Ж	-	955
6C1П	-	9002
6C2B	-	-
6C2П	-	6J4
6C2П-B	-	-
6C2C	-	6J5
6C3B	-	6K4A
6C3П	-	-
6C4П	-	-

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
6C4C	-	6B4G
6C5Д	TM1	2C40
6C5C	-	6C5; 6C5GT
6C6B	6C1B	-
6C6B-B	-	-
6C7B	-	-
6C7B-B	-	-
6C8C	-	2C22
6C9Д	-	-
6C10Д	-	2C43
6C11Д	-	-
6C13Д	-	-
6C15Π	-	-
6C16Д	-	-
6C17K	-	-
6C18C	-	-
6C19Π	-	-
6C20C	-	6BK4
6C21Д	-	-
6C28B	-	-
6C29B	-	-
6X1Π	-	ECF 80
6X2Π	-	6AL5
6X2Π-B	-	-
6X2Π-E	-	-
6X2Π-M	-	-
6X6C	6X6M	6H6GT

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
6X6C-E	-	-
6X7E	-	-
6Ц4П	6X4П	6X4
6Ц4П-B	-	-
6Ц4П-E	-	-
6Ц5C	6X5C	6X5; 6X5QT
6Ц10П	-	-
6Ц13П	-	-
6Ц15C	-	-
6Ц17C	-	6BL4
6Ц19П	-	-
6Э5П	-	-
6Э5П-M	-	-
6Э6П	-	-
6Э6П-E	-	-
7X12C	TO-3	-
7П12C	TO-4	-
10X1Л	-	-
10X3Л	-	-
10X12C	TO-1	-
10П12C	TO-2	-
10ЭП103	-	-
12Г1	-	12SR7
12Г2	-	12SQ7
12X1Л	-	-
12X3Л	-	-
12X8	-	12SJ7

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
12K1J	-	-
12K3	-	12SK7
12K4	-	12SQ7
12H10C	12H10M	12SC7
12H11C	12H11M	12SH7
12П4C	-	12A6
12П17J	-	-
12C3C	-	12L
12X3C	-	12G1
12П1П	12X1П	-

OSCILLATOR TUBES 25-600 MC/S

ГV-4	-	-
ГV-4A	-	-
ГV-5A	Г-5A	-
ГV-5B	Г-5ПA	-
ГV-8	ГK-300	-
ГV-10A	Г-10A	-
ГV-10B	Г-10PA	-
ГV-11A	Г-15A	-
ГV-12A	Г-880	880
ГV-13	Г-813	813
ГV-15	П-15	-
ГV-16B	Г-15PA	-
ГV-17	-	QQVO.3-10
ГV-18	-	QQVO.3-20
ГV-21B	-	-

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
ГV-22A	-	-
ГV-23A	-	-
ГV-23B	-	-
ГV-24A	-	-
ГV-25B	-	-
ГV-26A	-	-
ГV-27A	-	-
ГV-27B	827P	827R
ГV-28A	-	-
ГV-28B	-	-
ГV-29	829	829-B
ГV-30A	-	-
ГV-32	832	832-A
ГV-33B	ГV-33	-
ГV-34B	-	-
ГV-35B	-	-
ГV-36B	-	-
ГV-37B	-	-
ГV-38A	-	-
ГV-39B	-	-
ГV-50	II-50	-
ГV-72	-	-
ГV-80	II-800	-
ГV-81	-	-
ГV-89A	889A	889-A
ГV-89B	889B	889R-A

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
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OSCILLATOR TUBES ABOVE 600 MC/S

ГC-1Б	-	-
ГC-2Б	-	-
ГC-3Б	-	-
ГC-4	-	-
ГC-9Б	ЛД-9	LD 9
ГC-90Б	ЛД-90	LD 90

TRAVELING WAVE TUBES

УВ-1	-	-
УВ-5	-	-
УВ-6	-	-
УВ-7	-	-
УВ-14	-	-
УВ-204	-	-
УВ-205	-	-

PULSE TUBESPULSE AMPLIFIERS

ГМ-1	-	-
ГМ-3	ГМ-3/100	-
ГМ-4А	-	-
ГМ-5Б	-	-
ГМ-6Б	ЛД-6	LD 6
ГМ-7Б	ЛД-7	LD 7
ГМ-8	ПМ-3000	-

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
ГМ-10	Г-488	-
ГМ-11Б	ЛД-11	LD 11
ГМ-12Б	ЛД-12	LD 12
ГМ-13	ГМ-130	-
ГМ-13Б	-	-
ГМ-14Б	-	LD 14
ГМ-15Б	-	-
ГМ-16Б	-	-
ГМ-17	Г-480	NT 90
ГМ-18Б	ГМ-300	-
ГМ-19Б	-	-
ГМ-20	-	-
ГМ-21Б	-	-
ГМ-22	ГС-5	-
ГМ-23Б	-	-
ГМ-24А	-	-
ГМ-30	3E29	3E29
ГМ-70Б	ЛД-70	LD 70
ГМ-150	-	-

PULSE VACUUM DIODES

ВМ1-5/20	-	-
ВМ1-5/30	-	-
ВМ1-15/32	-	-
ВМ1-18/32	ВМ1-20/32	-
ВМ1-27/35	-	-

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GOST #	Old Types	Foreign Equivalent
ВН1-30/25	ВДИЭД	-
ВН1-70/32	ВДИ4Д	-
ВН1-100/50	ВДИ1Д	-
ВН2-5/30	-	-
ВН2-27/35	-	-
ВН2-70/32	-	-
ВН2-100/50	-	-

PULSE MODULATORS

ГММ-1Б	М-3000	-
ГММ-2Б	-	-
ГММ-3	-	-
ГММ-4Б	-	-
ГММ-5	-	-
ГММ-6	-	-
ГММ-7	-	-
ГММ-30	М-30/450	-
ГММ-83	Г-483	-
ГММ-85	Г-485	-
ГММ-89	Г-489	-
ГММ-90	Г-490	-

POWER TUBES

ГК-1А	ГКО-250	-
ГК-2А	ГКР-500	-
ГК-3А	Г-100А	-
ГК-4А	-	-
ГК-5А	-	-

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
ГK-6A	-	-
ГK-71	Г-471	471A
ГM-1A	M-20/35	-
ГM-51A	M-451	-
ГM-57	VE-180, M-457	-
ГM-60	M-600	-
ГM-70	M-470	-
ГM-100	M-1000	-

RECTIFIER TUBES

B1-0,02/20	B20/20	-
B1-0,03/13	B13/30	-
B1-0,05/12	VU-111-D	VU-111-D
B1-0,05/70	-	-
B1-0,06/25	-	-
B1-0,06/30	K-30	-
B1-0,075/2,5	V-1906-D	V-1906-D
B1-0,1/30	705A	705A
B-0,1/40	B40/100	-
B1-0,2/40	BD2	-
B1-0,3/70	B70/1000	-
B1-0,45/40	BD1	-
B1-1/2,5	-	-
ГP1-0,25/1,5	ГP-0,8/1,6; BГ-0,251500	-
ГP1-3/4000	ГPC-3/400	-
Г-807	-	807
ГP1-0,5/5	BГ-1,5/5000; ГГ-1,5/5	-

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
IT1-0,5/20	-	-
IT1-2/16	-	-
IT1-6/15	-	-

DISCHARGE TUBES

P-1	-	-
P-2	-	-
P-3	PE-6	-
P-4	-	-
P-5	-	-
P-6	-	-

ELECTRON SWITCH TUBES

ЛП4	КЛ-5	-
ЛП5	КЛ-6	-

VOLTAGE STABILIZERS

CF1H	-	OA2
CF1H-B	-	-
CF1H-E	-	-
CF2H	-	OB2
CF2C	75C5-30	VR-75/30
CF3H	-	-
CF3C	105C5-30	VR-105/30
CF4C	150C-30	VR-150/20
CF5B	-	-
CF5B-B	-	-
CF6C	-	-

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
CF13H	-	-
CF14H	-	-
CF15H	-	-
CF16H	-	-
CF201C	CF10C	-
CF202B	CF11B	-
CF301C	CF7C	-
CF302C	CF8C	-
CF303C	CF9C	-
CF304C	CF12C	-

GAS FILLED THYRATRONS

TT1B	T1B	-
TT1B-B	-	-
TT1-0,02/0,5	-	-
TT1-0,1/0,3	TT-0,3/0,3; TT-884	884
TT1-0,1/1,3	TT-0,5/1,3; TT-2050	2050
TT1-0,5/12	-	-
TT1-1/0,2	-	-
TT1-1,5/2	-	-
TT1-1,6/1	-	-
TT1-2,5/4	TT-8/3; TT1-2,5/3	-
TT1-2,5/10	-	-
TT1-2,5/12	TT-2,5/12	-
TT1-3,2/1	-	-
TT1-5/3	TT-15/3	-
TT1-6,4/1	-	-
TT1-12,5/1	-	-
TT2-0,1/0,1	TT-1050	1050

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GOST #	Old Types	Foreign Equivalent
ТТ2-0,5/12	-	-
ТТ2-2,5/10	-	-
ТТ3-0,1/1,3	2Д21	2D21
ТТ3-2,5/10	-	-
ТТН1-3/1	-	-
ТТН1-10/1	-	-
ТТН1-35/3	-	3C45
ТТН1-50/5	ТТН-3	-
ТТН1-90/8	ТТН-90/8; МТН-4	-
ТТН1-130/8	-	-
ТТН1-130/10	ТТН-4	-
ТТН1-260/12	-	-
ТТН1-325/16	ТТН-325/16; МТН-5	-
ТТН1-400/3,5	ТТН-400/3,5	-
ТТН1-400/16	-	-
ТТН2-200/3,5	-	-

MERCURY FILLED THYRATONS

ТP1-5/2	TP-15/2; TP1-2,5/2	-
TP1-6/15	TP-20/15	-
TP1-15/15	-	-
TP1-40/15	TP-120/15	-
TP1-85/15	TP1-400/15; TP1-130/15	-

GOLD CATHODE THYRATONS

TX1	PT-6	313C
TX2	ПТ1-0,012/2,8	-
TX3B	-	-
TX4B	-	-

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GOST #	Old Types	Foreign Equivalent
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IGNITRONS

И1-70/0,8	ИМ-50; И1-50/0,5	-
И1-100/1,5	-	-
И1-100/15	-	-
И1-140/0,8	-	-
И1-200/1,5	-	-
И1-350/0,8	-	-
И2-50/1,5	-	-

CATHODE RAY TUBES

5Л038И	Л0-738; 5Л038	2AP1
5Л038М	-	-
6ЛК1А	-	-
6ЛК1Б	-	МW6-2
6ЛК1И	-	-
6ЛК1П	-	-
7Л01М	7Л01А	-
7Л055И	7Л055	-
7Л055М	-	-
8ЛК1Б	-	-
8ЛМ3В	8ЛМ3	-
8Л01ВР	8Л01ВА	-
8Л02И	-	-
8Л029И	Л0-729; 8Л029	3BP1
8Л029М	-	-
8Л030И	Л0-730; 8Л030	-
8Л030М	-	-
8Л039В	Л0-739; 8Л039	-
9ЛМ1	-	-

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
10JK2B	-	-
10JM2	-	-
10JO43И	JO-743; 10JO43	-
13JK1B	-	-
13JK2B	-	-
13JM4B	13JM31A	-
13JM31B	JO-731; 13JM31	5FP7
13JM56И	13JM56	-
13JM57Д	13JM57	-
13JM58K	13JM58	-
13JO3И	13JO60; 13JO3	-
13JO4И	13JO61; 13JO4	-
13JO5A	-	-
13JO6И	-	-
13JO7A	-	-
13JO36B	JO-736; 13JO36	5CP7
13JO37A	JO-737; 13JO37	5CP1
13JO37И	-	-
13JO37И	-	-
13JO48И	JO-748; 13JO48	-
13JO49M	JO-749; 13JO49	-
13JO54A	JO-754; 13JO54	-
13JO54B	-	-
13JO54M	-	-
13JO101M	-	-
13JO102M	-	-
13JO103M	-	-

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
13Л0104А	-	-
13П1С	13П1М	-
15ЭП102	ПММ-4	-
15ЭП102А	ПММ-4	-
18ЛК2Б	-	-
18ЛК4Б	-	-
18ЛК5Б	-	-
18ЛК8Ж	-	-
18ЛК9А	-	-
18ЛК9Ж	-	-
18ЛК13Л	-	-
18ЛК15	ЛК-715А	-
18ЛМ1	-	-
18ЛМ35Б	ЛО-735; 18ЛМ35	7BP7
18Л01А	-	-
18Л047А	ЛО-747; 18Л047	-
18Л047Б	-	-
20ЛМ1Е	-	-
23ЛК2Б	-	-
23ЛК4Б	-	-
23ЛК7Б	-	-
23ЛК41	ЛК-741	-
23ЛМ34Б	ЛО-734; 23ЛМ34	9GP7
23Л01Б	-	-
23Л051А	ЛО-751; 23Л051	-
30П1С	30П1М	-
30Ц6С	-	-

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<u>QOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
31JK2B	-	-
31JM32B	JO-732; 31JM32	12DP7
31JO33B	JO-733; 31JO33	12GP7
35JK2B	-	-
40JK1B	-	-
43JK2B	-	-
43JK3B	-	-
43JK4B	-	-
43JK6B	-	-
43JK7B	-	-
43JK8B	-	-
45JM1B	-	-
53JK2B	-	-
53JK3B	-	-
53JK4C	-	-
53JK5B	-	-

TV CAMERA TUBES

ЛМ1	15JM1	-
ЛМ3	-	-
ЛМ6	-	-
ЛМ7	-	-
ЛМ13	-	-
ЛМ17	-	-
ЛМ21	-	-
ЛМ22	-	-
ЛМ23	ЛМ402	-
ЛМ27	-	-

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
---------------	------------------	---------------------------

ЛИ28	-	-
ЛИ101	ЛИ50; ЛИ752	-
ЛИ201	ЛИ25	-
ЛИ202	-	-
ЛИ203	-	-
ЛИ401	ЛИ26	-
ЛИ403	-	-
ЛИ404	-	-

OTHER IMAGE TUBES

8ЭП101	ПИМ-3	-
8ЭП101А	ПИМ-3	-
ЛИ1	-	-
ЛИ4	-	-
ЛИ7	ЛИЗМ	-
ЛИ8	-	-

INDICATOR TUBES

ОГ1	ЕГ1	-
ОГ2	ЕГ2	-
ОГ3	ЕГ3	-

COUNTER TUBES

СИ1Г	СТС-1; ЕГ-1	-
СИ1БГ	СК-11	-
СИ1Ф	-	-
СИ2Б	НТС-40; ТМ-40	-
СИ2БГ	СТС-1	-
СИ3Б	МСТ-18	-

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
СИЗБГ	СИ-300	-
СИ4БГ	-	-
СИ5Г	-	-
СИ6Г	-	-
СИ7Г	-	-
СИ8Г	-	-
СИ9БГ	-	-
СТ2С	-	-
СЦБ-3	-	-
СЦБ-4	-	-
СЦБ-51	-	-

PHOTO TUBES

ЦГ-1	-	-
ЦГ-3	-	-
ЦГ-4	-	-
Ф-1	-	-
Ф-2	СЦБ-2А	-
Ф-3	ВЦЦ-1	-
Ф-4	СЦБ-6	-
Ф-5	ЦБ-6	-
Ф-6	ВЦЦ-2	-
Ф-7	МБ-3	-
ФД1	-	-
ФД2	ФД-1А	-
ФД3	ФД-2А	-
ФД4	ФД-4	-
ФТ1	ФТ-4	-

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
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PHOTO MULTIPLIER TUBES

Φ3Y-1	-	-
Φ3Y-2	-	-
Φ3Y-11	-	-
Φ3Y-11A	-	-
Φ3Y-11B	-	-
Φ3Y-12	-	-
Φ3Y-12A	-	-
Φ3Y-13	-	-
Φ3Y-13A	-	-
Φ3Y-13B	-	-
Φ3Y-14	-	-
Φ3Y-14A	-	-
Φ3Y-15	-	-
Φ3Y-16	-	-
Φ3Y-17	-	-
Φ3Y-17A	-	-
Φ3Y-18	-	-
Φ3Y-18A	-	-
Φ3Y-19	-	-
Φ3Y-20	-	-
Φ3Y-20A	-	-
Φ3Y-22	-	-
Φ3Y-23	-	-
Φ3Y-24	-	-
Φ3Y-25	-	-
Φ3Y-27	-	-
Φ3Y-29	-	-

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
Φ3Y-31	-	-
Φ3Y-33	-	-
Φ3Y-35	-	-
Φ3Y-40	Φ3Y-3M	-
Φ3Y-41	Φ3Y-2M	-
Φ3Y-42	Φ3Y-1C	-
Φ3Y-43	Φ3Y-1B	-
Φ3Y-44	Φ3Y-2B	-
Φ3Y-45	Φ3Y-3B	-
Φ3Y-46	Φ3Y-P-5	-
Φ3Y-46A	Φ3Y-P-3	-
Φ3Y-47	Φ3Y-1B	-
Φ3Y-48	Φ3Y-1B1B	-

KLYSTRONS

K-29	-	-
K-30	-	-
K-31	-	-
K-32	-	-
K-33	-	-
K-34	-	-
K-35	-	-
K-41	-	-
K-42	-	-
K-48	-	-
K-308	-	-
K-309	-	-

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GOST #	Old Types	Foreign Equivalent
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TRANSISTORS - POINT CONTACT

C1A	KC1	-
C1B	KC2	-
C1B	KC4	-
C1Г	KC5	-
C1Д	KC6	-
C1E	-	-
C2A	-	-
C2B	KC7	-
C2B	KC8	-
C2Г	-	-
C3A	-	-
C3B	-	-
C3B	-	-
C3Д	-	-
C3E	-	-
C4A	-	-
C4B	-	-
C4B	-	-
C4Г	-	-
C5	-	-

TRANSISTORS - JUNCTION

П1A	-	-
П1B	-	-
П1B	-	-
П1Г	-	-
П1Д	-	-

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
П1Е	-	-
П1Ж	-	-
П1И	-	-
П2А	П2	-
П2Б	-	-
П3А	-	-
П3Б	-	-
П3В	-	-
П4А	-	-
П4Б	-	-
П4В	-	-
П4Г	-	-
П4Д	-	-
П5А	-	-
П5Б	-	-
П5В	-	-
П5Г	-	-
П5Д	-	-
П8	-	-
П9	-	-
П9А	-	-
П10	-	-
П11	-	-
П12	-	2N12
П13	П6	2N43
П13А	П6	-
П13Б	П6	-
П14	П6	-

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
П15	П6	-
П19	-	-
П101	-	-
П101A	-	-
П102	-	-
П103	-	-
П104	-	-
П105	-	-
П106	-	-
П107	-	-
П201	-	-
П201A	-	-
П202	-	-
П203	-	-
П204	-	-
П204A	-	-
П205	-	-
П206	-	-
П207	-	-
П207A	-	-
П208	-	-
П208A	-	-
П209	-	-
П209A	-	-
П210	-	-
П210A	-	-
П301	-	-

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
П302	-	-
П401	-	-
П402	-	-
П403	-	-
П404	-	-
П404A	-	-
П405	-	-
П405A	-	-
П406	-	2N113
П407	-	2N114
П410	-	-
П410A	-	-
П411	-	-
П411A	-	-
П501	-	-
П502	-	-
П503	-	-
П601	-	-

DIODE - SEMICONDUCTORS

Д2Б	-	-
Д2В	-	-
Д2Г	-	-
Л2Л	-	-
Л2Е	-	-
Л2Ж	-	-
Д2И	-	-
Д7А	-	-
Д7Б	-	-

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
Д7В	-	-
Д7Г	-	-
Д7Д	-	-
Д7Е	-	-
Д7Ж	-	-
Д9А	-	-
Д9Б	-	-
Д9В	-	-
Д9Г	-	-
Д9Д	-	-
Д9Е	-	-
Д9Ж	-	-
Д10	-	-
Д10А	-	-
Д10Б	-	-
Д11	-	-
Д12	-	-
Д12А	-	-
Д13	-	-
Д14	-	-
Д14А	-	-
Д101	-	-
Д101А	-	-
Д102	-	-
Д102А	-	-
Д103	-	-
Д103А	-	-
Д104	-	-

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
Д104А	-	-
Д105	-	-
Д105А	-	-
Д106	-	-
Д106А	-	-
Д201А	Д8А	-
Д201В	Д8В	-
Д201В	Д8В	-
Д201Г	Д8Г	-
Д201Д	Д8Д	-
Д201Е	Д8Е	-
Д201Ж	Д8Ж	-
Д201И	-	-
Д202	-	-
Д203	-	-
Д204	-	-
Д205	-	-
Д206	-	-
Д207	-	-
Д208	-	-
Д209	-	-
Д210	-	-
Д211	-	-
Д301	Д5	-
Д302	-	-
Д303	-	-
Д304	-	-
Д305	-	-

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
Д306	-	-
Д307	-	-
Д308	-	-
Д309	-	-
Д401	Д6	-
Д403А	Д52А; ДГ-СЛ	-
Д403Б	Д52Б; ДГ-СН	-
Д403В	Д52В; ДГ-СВ	-
Д405	-	-
Д405А	-	-
Д405АП	-	1N23D
Д405Б	-	-
Д405БП	-	-
Д602А	Д53А; ДГ-ПЗ	-
Д602Б	Д53Б; ДГ-П4	-
Д603	-	-
Д808	-	-
Д808А	-	-
Д809	-	-
Д809А	-	-
Д810	-	-
Д810А	-	-
Д811	-	-
Д811А	-	-
Д813	-	-
Д813А	-	-
Д1001	-	-
Д1001А	-	-

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<u>GOST #</u>	<u>Old Types</u>	<u>Foreign Equivalent</u>
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D1002	-	-
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D1002A	-	-
--------	---	---

D1003A	-	-
--------	---	---

D1A	-	-
-----	---	---

D1B	-	-
-----	---	---

D1B	-	-
-----	---	---

D1Г	-	-
-----	---	---

D1Д	-	-
-----	---	---

D1E	-	-
-----	---	---

D1Ж	-	-
-----	---	---

D2A	-	-
-----	---	---

UNKNOWN

ГМ1	-	-
-----	---	---

ГМ2	-	-
-----	---	---

ГМ3	-	-
-----	---	---

31-15/1,5	ГР50-15/1,5	-
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31-40/1,5	ГР50-40/1,5	-
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3M-4	133П	-
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SECRET

State Committee of the Council of Ministers of
the USSR on Radioelectronics

50X1-HUM

Copy No. 4487

ELECTRON-TUBE DEVICES

HANDBOOK

Second Edition

Volume I

General Section,
Receiving-Amplifier Tubes (through 6K7)

Planning-Design Bureau

SECRET

50X1-HUM

ARRANGEMENT OF HANDBOOK SECTIONS BY VOLUME

Volume I

General section

Receiving-amplifier tubes (through 6K7 inclusive)

Volume II

Receiving-amplifier tubes (continuation, beginning with 6N1P)

Traveling-wave tubes

Semiconductor devices

Volume III

Cathode-ray tubes

Photocells, photomultipliers, and electrooptical converters

Electron x-ray tubes

High-voltage rectifier tubes

Volume IV

Transmitting tubes

Klystrons and magnetrons

Volume V

Gas-discharge devices

Ballast tubes and regulator tubes

Elementary-particle counters

Various devices

1959

Composition Shop of the PKB
[Planning-Design Bureau]

Order No. 19

SECRET - 1 -

~~SECRET~~

This handbook is an official publication of the State Committee
of the Council of Ministers of the USSR for Radioelectronics. 50X1-HUM

The handbook is designed for enterprises and organizations involved in the development, production, and operation of equipment utilizing electron-tube and semiconductor devices.

The handbook is a subscription publication, and is periodically supplemented with new loose-leaf sheets, distributed to subscribers.

The information given in the handbook is based upon data from appropriate technical specifications.

This information is supplemented by recommendations as to standard operating conditions in which electron-tube devices are to be utilized.

This handbook does not replace existing standards and technical specifications for electron-tube devices, and thus is not a legal document in the filing of complaints.

Reprinting of information in the handbook is forbidden.

Inquiries, requests, and comments on problems connected with the content of the handbook should be directed to the Planning-Design Bureau.

Planning-Design Bureau, State Committee of the Council of Ministers of the USSR on Radioelectronics

~~SECRET~~ 11 -

INSTRUCTIONS FOR USE OF THE HANDBOOK

To facilitate rapid finding of required groups of devices, the sections of the handbook are separated by inserted sheets of fully colored paper.

On the pages included in the "General Section" of the handbook, or the introductory sections of the other parts, there are:

- a) title page;
- b) the month and year of publication of the page — in the lower left-hand corner;
- c) the page identification (for example: "Instructions, page 1," "Instructions, page 2," etc.) — in the lower right-hand corner.

On each handbook page for a device we have:

- a) the tube-type designation — in the upper right-hand corner;
- b) the month and year of publication of the handbook page — in the lower left-hand corner;
- c) the number of the text page (for example: page 1, page 2) or the symbol and page number for graphical material (for example: G-1, G-2) — in the lower right-hand corner.

Dimensional drawings for receiving-amplifier tubes and low-power rectifier tubes are combined on separate loose-leaf pages located in the "Receiving-Amplifier Tube" section.

Handbook pages referring to devices being produced experimentally bear the additional legend "preliminary data" in the lower left-hand corner of the page.

All changes and additions are introduced into the handbook by replacing old pages with new pages, as well as by adding new pages.

An arrow (←) is placed in the text of a handbook page opposite changed values, and the lower left-hand corner bears the note "← change introduced."

New pages should be inserted at the appropriate places in the sequence indicated in the accompanying special instructions.

On pages designed to replace previously published pages, the new date of publication is noted.

New loose-leaf sheets are sent out periodically.

(Above material published April 1959, PKV, Instructions, page 1)

EXPLANATIONS FOR HANDBOOK PAGES

1. The "General Data" section gives cathode curves, tube dimensions, and tube maximum weights.

2. In the diagrams showing the connections of tube electrodes with external leads, the arrangement of the pins is shown by circles with numbers corresponding to the bottom base or stem view; for tubes with bases having keys, the location of the key with respect to the pins is indicated. Top and side additional leads, disk contacts, as well as upper and lower pins for "acorn" type tubes are shown by means of black rectangles, and are located between the circles.

For tubes not having pins, the diagrams showing the connection of electrodes with external leads indicate the leads in the form of black rectangles arranged on corresponding sides of a square which is arbitrarily used to represent the body of the tube itself.

3. In the "Electrical Data" section, we give the rated values for electrode voltages, values of characteristics, together with permissible deviations from them, provided by the technical specifications for the corresponding tube type.

The electrical characteristics, as a rule, are measured with nominal voltages on the electrodes, unless otherwise specified, in accordance with the state standards whose number appears on the list of standards relating to electron-tube devices in the "General Part" section (Volume I). The tube life shown in the handbook sheets hold, as a rule, for 90% of all of the devices.

4. The "maximum permissible operating data" Section indicates the maximum value of currents, voltages, powers, and frequencies which cannot be exceeded if reliable operation of a tube is to be guaranteed, without damage to the device or a decrease in its operating life.

5. The characteristics for electron-tube devices shown in the handbook pages are, as a rule, averaged, plotted by graphical averaging of the individual curves for a certain number of tubes of the given type that possess basic electrical characteristics close to the nominal values.

(Above material published April 1959, PKB, explanation, page 1)
Individual curves may differ from the averaged characteristics given within limits of the permissible deviations of the electrical constants.

6. On the plate curves for amplifier output and transmitting tubes, a dashed line is shown, corresponding to the maximum permissible power dissipated by the plate under static conditions.

Points corresponding to rated filament voltage are shown on the curves for the filament and emission characteristics of transmitting tubes by intersection of the dashed lines.

7. The cooling standards (water and air flow rates) are given in the handbook sheets for high-power transmitting and amplifier tubes and gas-discharge devices for the maximum permissible powers dissipated by the electrodes.

8. The negative grid blanking voltage for oscillograph tubes is determined by the voltage at which the stationary focused point vanishes.

9. For tubes with electrostatic or magnetic beam control (focusing and deflection) the undeflected focused spot normally lies within a square or a circle the size of which is shown in the technical spe-

cifications for the appropriate tube type. The center of the square or circle in this case coincides with the geometric center of the tube screen, while for tubes with electrostatic beam deflection, one side of the square is parallel to the sweep line D_1D_2 .

10. Leakage currents in modulator, first-anode, and accelerating-electrode circuits of oscillograph tubes are determined, as a rule, with a negative voltage on these electrodes of 100 v, unless otherwise specified in the handbook pages.

11. The negative grid blanking voltage (control electrode) in transmitting pick-up tubes is defined as the grid voltage at which the image of a 0249 (or 0150) pattern vanishes from the screen.

12. Measurement of the pulse emission from metal-ceramic tubes is carried out with an application to the connected electrodes of voltage pulses lasting from 2 to 5 μ sec at a frequency of 50 cps, unless otherwise specified in the handbook sheets.

13. Measurement of thermal current from grids of metal-ceramic tubes is carried out under pulsed conditions at maximum dissipated grid power, and with a grid-cylinder temperature of 100°C, unless otherwise specified in the handbook sheets.

14. The maximum wavelength for metal-ceramic tubes is defined as the wavelength at which generation of oscillations still takes place, without taking into account the magnitude of the output power.

(Above data published April 1959, PKB, explanation, sheet 1)

SYSTEM FOR ARBITRARY DESIGNATIONS FOR VACUUM-TUBE AND SEMICONDUCTOR DEVICES

In accordance with the GOST "Electron-Tube and Crystal Devices. Ion Devices. System of Designations," the system of arbitrary designations for electron-tube and semiconductor devices consists of the following four elements (in order of the symbols).

First Element in Designation

<u>Group of Devices</u>	<u>Arbitrary Designation</u>
Long- and short-wave transmitting tubes (with maximum frequencies extending to 25 Mc).....	GK
Microwave transmitting tubes (with maximum frequencies ranging from 25 to 600 Mc).....	GU
Centimeter-band transmitting tubes (with maximum frequencies above 600 Mc).....	GS
Modulator tubes.....	GM
Magnetrons.....	M
Klystrons.....	K
Traveling-wave tubes.....	UV
Backward-wave tubes.....	OV
Rectifier tubes.....	V
Stabilization tubes (voltage regulators).....	SG
Regulation tubes (current regulators).....	ST
Thyratrons.....	T
Gas-filled rectifier tubes.....	G
Ignitrons.....	I
Exitrons.....	E
Discharge tubes of all types.....	R
Decatrons.....	O
Noise generators.....	GSh
Photocells.....	F
Photomultipliers.....	FEU
Photodiodes.....	FD
Phototransistors.....	FT

(Above material published April 1959 PKB, system of designations, sheet 1)

SYSTEM FOR ARBITRARY DESIGNATIONS FOR VACUUM-TUBE AND SEMICONDUCTOR DEVICES (Cont'd.)

First Element in Designation

<u>Group of Devices</u>	<u>Arbitrary Designation</u>
Electrooptical converters	A number indicating the envelope diameter in centimeters (rounded off)
Elementary-particle counters (radiation counters).....	SI
Electrometer tubes.....	EM
Receiving-amplifying tubes and rectifier tubes classified as receiving-amplifying tubes.....	A number indicating the filament voltage in volts (rounded off)
Cathode-ray devices (with the exception of electron-beam switches, transmitting television devices, and special-purpose electron-beam devices) ..	A number indicating the diameter or diagonal of the screen in centimeters (rounded off)
Special-purpose cathode-ray devices, television pickup devices, and electron-beam switches.....	L
Semiconductor diodes.....	D
Transistors:	
a) point-contact.....	S
b) junction.....	P

Notes:

1. For gas-filled rectifier tubes and thyratrons, we add to the first element of the designation: for a gas-filled tube the letter "G," for mercury-vapor filled tubes - the letter "R."
2. For low-discharge (cold-cathode) thyratrons, the letters "Kh" are added to the first element of the designation.
3. For all types of pulse devices, the letter "I" is added to the first element in the designation.

Second Element in Designation

<u>Group of Devices</u>	<u>Arbitrary Designation</u>
Diodes.....	D
Twin diodes.....	Kh
Triodes.....	S
Tetrodes.....	E
Pentode and beam tetrode output tubes	P
Remote-cutoff pentodes and beam-power tubes.....	K
Sharp-cutoff pentodes and beam tetrodes.....	Zh
(Above material published April 1959, PKB, system of designations, sheet 1)	

SYSTEM FOR ARBITRARY DESIGNATIONS FOR VACUUM-TUBE
AND SEMICONDUCTOR DEVICES (Cont'd.)

Second Element in Designation

<u>Group of Devices</u>	<u>Arbitrary Designation</u>
Frequency conversion tubes with two control grids	A
Secondary-emission pentodes.....	V
Dual-triodes.....	N
Diode-triodes.....	G
Diode-pentodes.....	B
Triode-pentodes.....	F
Triode and hexodes, heptode, octode..	I
Beam-power tubes.....	L
Tuning indicators.....	Ye
Klystrons:	
a) amplifier.....	U
b) multiplier.....	M
Gas-filled rectifiers.....	A number, indicating the sequence of the device.
Ignitrons.....	
Exitrons.....	
Thyratrons.....	
Rectifier tubes.....	
Noise generators.....	
Voltage regulators	
Current regulators.....	A number, indicating the sequence number of type of device
Elementary-particle counters (radiation counters).....	
Semiconductor diodes.....	
Transistors.....	
Photodiodes.....	
Phototransistors.....	
Oscilloscope tubes and kinescopes with electrostatic beam deflection.....	LO
Oscilloscope tubes with electromagnetic beam deflection.....	LM
Kinescopes with electromagnetic beam deflection.....	LK
Cathode-ray memory tubes.....	N
Television pick-up devices.....	I
Electron-beam switches and trochotrons.....	P
Electrooptical converters.....	EP
Discharge devices with pressures higher than atmospheric (trigatrons).....	T
Resonant discharge devices.....	R
Vacuum decatrons.....	V
Gas-filled decatrons.....	G
Rectifier tubes classified as receiving-amplifier tubes.....	Ts

Note:

Transmitting and modulator tubes, untuned discharge devices, magne-

trons, reflex klystrons, traveling-wave tubes, backward-wave tubes, photocells, photomultipliers, and electrometer tubes have no second element in their designation.

(Above material published April 1959, PKB, system of designations, sheet 2)

SYSTEM FOR ARBITRARY DESIGNATIONS FOR VACUUM-TUBE AND SEMICONDUCTOR DEVICES (Cont'd.)

Third Element in Designation

<u>Group of Devices</u>	<u>Arbitrary Designation</u>
Transmitting tubes for all bands.....	} Number, indicating the serial number of the type of device.
Modulator tubes.....	
All types of discharge devices.....	
Decatrons.....	
Cathode-ray devices of all types.....	} Number, indicating the serial number of the type of device.
Receiving-amplifier tubes and rectifier tubes classified in this category.....	
Electrometer tubes.....	
Photocells.....	
Photomultipliers.....	
Traveling-wave tubes.....	
Backward-wave tubes.....	
Klystrons.....	
Magnetrons.....	} Three digit number the first number of which indicates the number of cameras
Electrooptical converter.....	
Low-power thyratrons and cold-cathode thyatrons designed in the form of receiving-amplifier tubes.....	} A letter indicating that the device belongs to a specific series of envelope designs (the same as in the case of the fourth element for receiving-amplifier tubes)
Voltage regulators.....	
Current regulators.....	
Alpha-radiation counters.....	
Soft beta-radiation counters.....	A
Hard beta-radiation counters.....	B
Gamma-radiation counters.....	BG
Neutron counters.....	G
X-ray counters.....	N
Photon counters.....	R
Semiconductor diodes.....	F
Transistors.....	} A letter indicating the variety of device.

Note:

Gas-filled rectifiers, thyratrons (with the exception of low-power receiving-type thyratrons), ignitrons, exitrons, noise diodes, rectifier tubes, as well as semiconductor diodes not varying in type have no third element in their designation.

(Above material published April 1959, PKB, system of designations, sheet 3)

SYSTEM FOR ARBITRARY DESIGNATION FOR VACUUM-TUBE AND SEMICONDUCTOR DEVICES (Cont'd.)

Fourth Element in Designation

<u>Group of Devices</u>	<u>Arbitrary Designation</u>
Transmitting tubes for all ranges and modulator tubes.....	A letter indicating the nature of the forced cooling where it is present: water cooling, A; air-cooling, B
Magnetrons.....	Letter, indicating variety of device
Electrooptical converters.....	
Photomultipliers.....	
Gas-filled rectifiers.....	A number in the form of a fraction in which the numera- tor indicates the average value of the current in amperes (for pulse devices - the surge value of the current), and the de- nominator - the peak value of the inverse voltage in kilovolts.
Ignitrons.....	
Exitrons.....	
Rectifier tubes.....	
Thyratrons (with the exception of glow-discharge thyratrons and low-power receiving-type recti- fiers).....	
Receiving-amplifier tubes and recti- fiers classified in this cate- gory.....	
In metal envelope.....	No designation
In glass envelope.....	S
In ceramic envelope.....	K
"Acorn" type.....	Zh
Miniature, diameter 19 and 22.5 mm.	P
Subminiature, diameter 10 and 8.5 mm.....	B
Subminiature, diameter 7 mm.....	A
Subminiature, diameter no more than 4 mm.....	R
With lock in base key.....	L
With disk contacts.....	D
Oscilloscope tubes and kinescopes....	A letter indicating the type of screen

Note:

1. Receiving-amplifier tubes, low-power rectifier tubes, thyratrons, voltage regulators, and current regulators resembling receiving-amplifier tubes that differ from the main types in additional properties, have a dash following the fourth element and:

 the letter "V" for tubes of increased reliability and mechanical strength;

 the letter "Ye" for tubes with increased service lives;

 the letter "I" for pulse tubes.

2. Magnetrons, electrooptical converters, and photomultipliers not broken down within a type, klystrons, traveling-wave tubes, backward-wave tubes, discharge devices, decatrons, special-purpose cathode-ray devices, including pick-up tubes, electron-beam switches and trochotrons, photocells, photodiodes, and phototransistors, radiation counters, glow-discharge thyratrons, low-power receiving-type thyratrons, noise generators, voltage regulators (stabilitrans) as

well as current regulators, electrometer tubes, and all types of semiconductor devices do not have a fourth element in their designations.

An element missing in an arbitrary designation (with the exception of the last element) is indicated by means of the dash (-).

(Above material published April 1959, PKB, system of designations, sheet 3)

TABLES OF CONVENTIONAL DESIGNATIONS FOR ELECTRON-TUBE
AND SEMICONDUCTOR DEVICES

Below we give conversion tables for conventional designations for electron-tube and semiconductor devices.

For convenience in utilization, the tables are given in two versions: To convert from designations based upon the GOST "Electron-Tube and Crystal Devices. Ion Devices. System of Designations" to older designations and, conversely, from the old designations to the new.

The conventional designations for the devices listed in the tables are arranged in order of their component numbers and letters.

Designations Based Upon GOST, old designations, and Foreign Analogs

Designation		
GOST	Old	Foreign Analogs
06Ж6Б 06Zh6B	—	—
—	06П2Б 06P2B	CK505AX
1A1П 1A1P	—	1R5, DK 91
1A2П 1A2P	—	—
1B1П 1B1P	—	1S5, DAF 91
1B2П 1B2P	—	—
1Ж17Б 1Zh17B	—	—
1Ж18Б 1Zh18B	—	—
1Ж24Б 1Zh24B	2A-1 2A-1	—
1Ж29Б 1Zh29B	Ц-2 Ts-2	—
1И2П 1I2P	—	—
1K1П 1K1P	—	1T4, DF 91
1K2П 1K2P	—	—
1H3C 1N3S	1H1 1N1	1G6—GT/G
1П2Б 1P2B	—	CK507AX
1П3Б 1P3B	—	—
1П4Б 1P4B	—	—

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Обозначение		
по ГОСТу	старое	иностранных аналогов
1П5Б 1P5B	—	—
1П6Б 1P6B	—	—
1П22Б 1P22B	Г'-3 G'-3	—
1П24Б 1P24B	Ц-1 Ts-1	—
1С12П 1S12P	—	DC 96
1Ц1С 1Ts1S	1Ц1 1Ts1	—
1Ц7С 1Ts7S	—	1B3.8016
1Ц11П 1Ts11P	—	—
2Д1С 2D1S	ДИ2-10 DI2-10	—
2Д2С 2D2S	ДШ2-10 DSh2-10	1.G-16
2Д3Б 2D3B	2Д3С 2D3S	—
2Ж14Б 2Zh14B	—	—
2Ж15Б 2Zh15B	—	—
2Ж27.1 2Zh27L	2Ж27 2Zh27	—
2Ж27П 2Zh27P	—	—
2Ж28.1 2Zh28L	—	—
2П1П 2P1P	—	3S4, DI 92
2П2П 2P2P	—	—
2П5Б 2P5B	—	—
2П19Б 2P19B	—	—
2П29.1 2P29L	2П29 2P29	—
2П29П 2P29P	—	—
2С3А 2S3A	—	—
2С4С 2S4S	—	2A3
2С14Б 2S14B	—	—
2Х1Л 2Kh1L	2Х1 2Kh1	—
2Ц2С 2Ts2S	—	2X2/879
3Д6А 3D6A	—	—
3Ж1Б 3Zh1B	—	—
3Ж2Б 3Zh2B	—	—
3ЛК1Б 3LK1B	—	—
3С6Б 3S6B	—	—
3С7Б 3S7B	—	—
3Ц16С 3Ts16S	—	3B2

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Таблица, лист 1

Обозначение		
по ГОСТу	старое	иностранных аналогов
3Ц18П 3Ts18P	—	—
4Д5С 4D5S	Д-1-Д D-1-D	—
4Ж1.1 4Zh1L	—	—
4П1.7 4P1L	—	—
4П10С 4P10S	VT-127-D	VT-127-D
4С3С 4S3S	—	—
4Ц6С 4Ts6S	4Д2, 4Ц1М 4D2, 4Ts1M	—
5ЛО38И 5LO38I	ЛО-738, 5.ЛО38	LO-738, 2AP1
5ЛО38М 5LO38M	—	5LO38
5Ц3С 5Ts3S	—	5T4G
5Ц4С 5Ts4S	—	5Z4G
5Ц8С 5Ts8S	—	—
5Ц9С 5Ts9S	—	—
5Ц9С-Е 5Ts9S-Ye	—	—
5Ц12П 5Ts12P	—	—
6А2П 6A2P	—	6BE6, 6H31, EK 90
6А3П 6A3P	—	6BN6
6А7 6A7	—	6SA7
6А7-Е 6A7-Ye	—	—
6А8 6A8	—	6A8
6А10С 6A10S	6A10	6SA7
6Б8 6B8	—	6B8, VT-93
6В1П 6V1P	ЛП-34 LP-34	—
6Г1 6G1	—	6SR7
6Г2 6G2	—	6SQ7
6Г3П 6G3P	—	EABC 80
6Г7 6G7	—	6Q7
6Д3Д 6D3D	ДМ1 DM-1	559
6Д4Ж 6D4Zh	6X1Ж 6Kh1Zh	9004
6Д6А 6D6A	6Д1А 6D1A	—
6Д6А-В 6D6A-V	—	—
6Д8Д 6D8D	—	—
6Д10Д 6D10D	—	—
6Е1П 6Ye1P	—	—

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Обозначение		
по ГОСТу	старое	иностранных аналогов
6Е5С 6Ye5S	6Е5 6Ye5	6Е5
6Ж1Б 6Zh1B	-	CK5702
6Ж1Б-В 6Zh1B-V	-	-
6Ж1Ж 6Zh1Zh	-	954
6Ж1П 6Zh1P	-	6AK5, 6F 32, EF 95
6Ж1П-В 6Zh1P-V	-	-
6Ж1П-Е 6Zh1P-Ye	-	-
6Ж2Б 6Zh2B	-	CK5639
6Ж2Б-В 6Zh2B-V	-	-
6Ж2П 6Zh2P	-	6AS6, 6F 33
6Ж2П-В 6Zh2P-V	-	-
6Ж2П-Е 6Zh2P-Ye	-	-
6Ж3 6Zh3	-	6SH7
6Ж3П 6Zh3P	6АЖ5 6AZh5	6AG5
6Ж4 6Zh4	6AC7 6AS7	6AC7
6Ж4-Е 6Zh4-Ye	-	-
6Ж4П 6Zh4P	-	6AU6, EF 94
6Ж5Б 6Zh5B	-	-
6Ж5Б-В 6Zh5B-V	-	-
6Ж5П 6Zh5P	-	-
6Ж6С 6Zh6S	7-62-П Z-62-D	Z-62-D
6Ж7 6Zh7	-	6J7
6Ж8 6Zh8	-	6SJ7
6Ж8-Е 6Zh8-Ye	-	-
6Ж9Б 6Zh9B	-	-
6Ж9П 6Zh9P	-	EI 80F
6Ж9П-Е 6Zh9P-Ye	-	-
6Ж10Б 6Zh10B	-	-
6Ж10Б-В 6Zh10B-V	-	-
6Ж10П 6Zh10P	-	-
6Ж11П 6Zh11P	-	-
6Ж13.7 6Zh13L	6Ж13 6Zh13	VR-136
6Ж21П 6Zh21P	-	-
6Ж22П 6Zh22P	-	-

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Обозначение		
по ГОСТу	старое	иностранных аналогов
6Ж23П 6Zh23P		—
6Ж28Б 6Zh28B	—	—
6Ж29Б 6Zh29B		
6Н1П 6I1P		ECH 81, 6A15
6К1Б 6K1B	—	—
6К1Ж 6K1Zh		756
6К1Л 6K1L		—
6К1П 6K1P		8013
6К3 6K3	—	6SK7
6К4 6K4	—	6SG7
6К4П 6K4P	6K2П 6K2P	6BA6, 6E 31, EF 93
6К4П-В 6K4P-V		—
6К4П-Е 6K4P-Ye		—
6К7 6K7		6K7
6К9С 6K9S	6K9M 6K9M	—
6Л7 6L7	—	6L7
6ЛК1А 6LK1A	—	—
6ЛК1Б 6LK1B	—	MW6-2
6ЛК1И 6LK1I	—	—
6ЛК1П 6LK1P	—	—
6Н1П 6N1P	—	—
6Н1П-В 6N1P-V	—	—
6Н1П-Е 6N1P-Ye	—	—
6Н1П-И 6N1P-I	—	—
6Н2П 6N2P	—	—
6Н2П-В 6N2P-V	—	—
6Н2П-Е 6N2P-Ye	—	—
6Н3П 6N3P	—	2C51
6Н3П-В 6N3P-V	—	—
6Н3П-И 6N3P-I	—	—
6Н4П 6N4P	12Н4П 12N4P	12AY7
6Н5П 6N5P	—	—
6Н5С 6N5S	6Н11 6N11	6AS7GT

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Обозначение		
по ГОСТу	старое	иностранных аналогов
6Н6П 6N6P	—	—
6Н6П-И 6N6P-I	—	—
6Н7С 6N7S	—	6N7GT
6Н8С 6N8S	6Н8М 6N8M	6SN7GT
6Н8С-Е 6N8S-Ye	—	—
6Н9С 6N9S	6Н9М 6N9M	6SL7GT
6Н9С-Е 6N9S-Ye	—	—
6Н10С 6N10S	6Н10М 6N10M	6SC7
6Н12С 6N12S	—	5687
6Н13С 6N13S	—	6AS7GT
6Н14П 6N14P	—	ECC 84
6Н15П 6N15P	6Н15 6N15	616, ECC 91, 6CC31
6Н16Б 6N16B	—	—
6Н17Б 6N17B	—	—
6П1П 6P1P	—	6AQ5, EL 90, 6L 31
6П1П-В 6P1P-V	—	—
6П1П-Е 6P1P-Ye	—	—
6П3С 6P3S	6П3 6P3	6L6
6П3С-Е 6P3S-Ye	—	—
6П6С 6P6S	—	6V6GT
6П7С 6P7S	6П7 6P7	6BG6G
6П8С 6P8S	6П6С 6I6S	6U6GT
6П9 6P9	6АГ7 6AG7	6AG7
6П9-Е 6P9-Ye	—	—
6П13С 6P13S	—	—
6П14П 6P14P	—	EL 84, 6BQ5
6П15П 6P15P	—	—
6П18П 6P18P	—	—
6П20С 6P20S	—	6CB5
6П21С 6P21S	1U-31 1U-31	5516
6П24П 6P24P	—	—
6С1Ж 6S1Zh	—	955
6С1П 6S1P	—	9002

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Лист 3

Обозначение		
по ГОСТу	старое	иностранная аналогов
6C2Б 6S2B	—	—
6C2П 6S2P	—	6J4
6C2П-В 6S2P-V	—	—
6C2С 6S2S	—	6J5
6C3Б 6S3B	—	6K4A
6C3П 6S3P	—	—
6C4П 6S4P	—	—
6C4С 6S4S	—	6B4G
6C5Д 6S5D	ГМ1 TM1	2C4L
6C5С 6S5S	—	6C5, 6C5G1
6C6Б 6S6B	6C1Б 6S1B	—
6C6Б-В 6S6B-V	—	—
6C7Б 6S7B	—	—
6C7Б-В 6S7B-V	—	—
6C8С 6S8S	—	2C22
6C9Д 6S9D	—	—
6C10Д 6S10D	—	2C43
6C11Д 6S11D	—	—
6C13Д 6S13D	—	—
6C15П 6S15P	—	—
6C16Д 6S16D	—	—
6C17К 6S17K	—	—
6C18С 6S18S	—	—
6C19П 6S19P	—	—
6C20С 6S20S	—	6BK4
6C21Д 6S21D	—	—
6C23Б 6S23B	—	—
6C29Б 6S29B	—	—
6Ф1П 6F1P	—	ECF 801
6X2П 6Kh2P	—	6AL5
6X2П-В 6Kh2P-V	—	—
6X2П-Е 6Kh2P-Ye	—	—
6X2П-И 6Kh2P-I	—	—

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Обозначение		
по ГОСТу	старое	иностранных аналогов
6X6C 6Kh6S	6X6M 6Kh6M	6H6GT
6X6C-E 6Kh6S-ye	—	—
6X7B 6Kh7B	—	—
6Ц4П 6Ts4P	6X4П 6Kh4P	6X4
6Ц4П-В 6Ts4P-V	—	—
6Ц4П-Е 6Ts4P-ye	—	—
6Ц5C 6Ts5S	6X5C 6Kh5S	6X5, 6X5GT
6Ц10П 6Ts10P	—	—
6Ц13П 6Ts13P	—	—
6Ц15C 6Ts15S	—	—
6Ц17C 6Ts17S	—	6BL4
6Ц19П 6Ts19P	—	—
6Э5П 6E5P	—	—
6Э5П-И 6E5P-I	—	—
6Э6П 6E6P	—	—
6Э6П-Е 6E6P-ye	—	—
7Ж12C 7Zh12S	ТО-3	—
7П12C 7P12S	ТО-4	—
7ЛО1М 7LO1M	7ЛО1А 7LO1A	—
7ЛО55И 7LO55I	7ЛО55 7LO55	—
7ЛО55М 7LO55M	—	—
8ЛК1Б 8LK1B	—	—
8ЛМ3В 8LM3V	8ЛМ3 8LM3	—
8ЛО1ВР 8LO1VR	8ЛО1ВА 8LO1VA	—
8ЛО2И 8LO2I	ЛО-729, 8LO29	—
8ЛО29И 8LO29I	ЛО-729, 8LO29	3BP1
8ЛО29М 8LO29M	—	—
8ЛО30И 8LO30I	ЛО-730, 8LO30	—
8ЛО30М 8LO30M	—	—
8ЛО39В 8LO39V	ЛО-739, 8LO39	—
8ЭП101 8EP101	ПМ-3 PIM-3	—
8ЭП101А 8EP101A	ПМ-3 PIM-3	—
9ЛМ1 9LM1	—	—

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по ГОСТу	старое	иностранных аналогов
10Ж1Л 10Zh1L	-	-
10Ж3Л 10Zh3L	-	-
10Ж12С 10Zh12S	ТО-1	-
10ЛК2Б 10LK2B	-	-
10ЛМ2 10LM2	LO-743, 10LO43	-
10ЛО43И 10LO43I	ТО-743, 10ЛО43	-
10П12С 10P12S	ТО-2	-
10ЭП103 10EP103	-	-
12Г1 12G1	-	12SR7
12Г2 12G2	-	12SQ7
12Ж1Л 12Zh1L	-	-
12Ж3Л 12Zh3L	-	-
12Ж8 12Zh8	-	12SJ7
12К1Л 12K1L	-	-
12К3 12K3	-	12SK7
12К4 12K4	-	12SG7
12Н10С 12N10S	12Н10М 12N10M	12SC7
12Н11С 12N11S	12Н11М 12N11M	12AH7
12П4С 12P4S	-	12A6
12П17Л 12P17L	-	-
12С3С 12S3S	-	LD1
12Х3С 12Kh3S	-	LG1
12Ц1П 12Ts1P	12Х1П 12Kh1P	-
13ЛК1Б 13LK1B	-	-
13ЛК2Б 13LK2B	-	-
13ЛМ4В 13LM4V	13LM31A	-
13ЛМ31В 13LM31V	LO731, 13LM31	-
13ЛМ56И 13LM56I	13LM56	5FP7
13ЛМ57Д 13LM57D	13LM57	-
13ЛМ58К 13LM58K	13LM58	-
13ЛО3И 13LO3I	13ЛО60, 13ЛО3	13LO60, 13LO3
13ЛО4И 13LO4I	13ЛО61, 13ЛО4	13LO61, 13LO4
13ЛО5А 13LO5A	-	-

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Обозначение		
по ГОСТу	старое	иностранных аналогов
13LO6I 13.ЛО6И	—	—
13LO7A 13ЛО7А	—	—
13LO36V 13.ЛО36В	ЛО-736, 13ЛО36	—
13LO37A 13.ЛО37А	ЛО-736, 13ЛО36	5CP7
13LO37I 13ЛО37И	ЛО-737, 13ЛО37	5CP1
13LO37M 13.ЛО37М	ЛО-737, 13ЛО37	—
13LO48I 13.ЛО48И	—	—
13LO49M 13.ЛО49М	ЛО-748, 13ЛО48	—
13LO54A 13.ЛО54А	ЛО-748, 13ЛО48	—
13LO54V 13.ЛО54В	ЛО-749, 13ЛО49	ЛО-749, 13ЛО49
13LO54M 13.ЛО54М	ЛО-754, 13ЛО54	—
13LO101M 13.ЛО101М	—	ЛО-754, 13ЛО54
13LO102M 13ЛО102М	—	—
13LO103M 13ЛО103М	—	—
13LO104A 13.ЛО104А	—	—
13P1S 13П1С	13П1М 13P1M	—
15EP102 15ЭП102	П1М-4 P1M-4	—
15EP102A 15ЭП102А	П1М-4 P1M-4	—
18LK2B 18ЛК2Б	—	—
18LK4B 18.ЛК4Б	—	—
18LK5B 18.ЛК5Б	—	—
18LK8Zh 18.ЛК8Ж	—	—
18LK9A 18.ЛК9А	—	—
18LK9Zh 18.ЛК9Ж	—	—
18LK13L 18.ЛК13Л	—	—
18LK15 18.ЛК15	ЛК-715А LK-715A	—
18LM1 18ЛМ1	ЛО-735, 18ЛМ35	—
18LM35V 18.ЛМ35В	ЛО-735, 18ЛМ35	7BP7
18LO1A 18.ЛО1А	ЛО-747, 18ЛО47	—
18LO47A 18.ЛО47А	ЛО-747, 18ЛО47	—
18LO47V 18.ЛО47В	—	—
20LM1Ye 20ЛМ1Е	—	—
23LK2B 23ЛК2Б	—	—

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Лист 5

Обозначение		
по ГОСТу	старое	иностранных аналогов
23ЛК4Б <i>23ЛК4В</i>	—	—
23ЛК7Б <i>23ЛК7В</i>	—	—
23ЛК41 <i>23ЛК41</i>	ЛК-741 <i>ЛК-741</i>	—
23ЛМ34В <i>23ЛМ34В</i>	ЛО-734, 23ЛМ34	9GP7
23ЛО1В <i>23ЛО1В</i>	ЛО-734, 23ЛМ34	—
23ЛО51А <i>23ЛО51А</i>	ЛО-751, 23ЛО51	—
30П1С <i>30П1С</i>	30П1М <i>30П1М</i>	—
30Ц6С <i>30Т56С</i>	—	—
31ЛК2Б <i>31ЛК2В</i>	ЛО-732, 31ЛМ32	—
31ЛМ32В <i>31ЛМ32В</i>	ЛО-732, 31ЛМ32	12DP7
31ЛО33В <i>31ЛО33В</i>	ЛО-733, 31ЛО33	12GP7
35ЛК2Б <i>35ЛК2В</i>	ЛО-733, 31ЛО33	—
40ЛК1Б <i>40ЛК1В</i>	—	—
43ЛК2Б <i>43ЛК2В</i>	—	—
43ЛК3Б <i>43ЛК3В</i>	—	—
43ЛК4Б <i>43ЛК4В</i>	—	—
43ЛК6Б <i>43ЛК6В</i>	—	—
43ЛК7Б <i>43ЛК7В</i>	—	—
43ЛК8Б <i>43ЛК8В</i>	—	—
45ЛМ1В <i>45ЛМ1В</i>	—	—
53ЛК2Б <i>53ЛК2В</i>	—	—
53ЛК3Б <i>53ЛК3В</i>	—	—
53ЛК4Ц <i>53ЛК4Т</i>	—	—
53ЛК5Б <i>53ЛК5В</i>	—	—
В1-0,02/20 <i>В1-0,02/20</i>	В20 20 <i>В20/20</i>	—
В1-0,03/13 <i>В1-0,03/13</i>	В13 30 <i>В13/30</i>	—
В1-0,05/12 <i>В1-0,05/12</i>	УУ-111-Д	УУ-111-Д
В1-0,05/70 <i>В1-0,05/70</i>	—	—
В1-0,06/25 <i>В1-0,06/25</i>	—	—
В1-0,06/30 <i>В1-0,06/30</i>	К-30	—
В1-0,075/2,5 <i>В1-0,075/2,5</i>	В-1906-Д	В-1906-Д
В1-0,1/30 <i>В1-0,1/30</i>	705А	705А
В1-0,1/40 <i>В1-0,1/40</i>	В40 100 <i>В40/100</i>	—

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Обозначение		
по ГОСТу	старое	иностранных аналогов
В1-0,2/40 V1-0.2/40	ВД2 VD2	—
В1-0,3/70 V1-0.3/70	В70/1000 V70/1000	—
В1-0,45/40 V1-0.45/40	ВД1 VD1	—
В1-1 2,5 V1-1/2.5	—	—
ВН1-5/20 VI1-5/20	—	—
ВН1-5 30 VI1-5/30	—	—
ВН1-15 32 VI1-15/32	—	—
ВН1-18 32 VI1-18/32	ВН1-20/32 VI1-20/32	—
ВН1-27 35 VI1-27/35	—	—
ВН1-30 25 VI1-30/25	ВДИЗД VDI3D	—
ВН1-70/32 VI1-70/32	ВДИ4Д VDI4D	—
ВН1-100 50 VI1-100/50	ВДИ1Д VDI1D	—
ВН2-5 30 VI2-5/30	—	—
ВН2-27 35 VI2-27/35	—	—
ВН2-70 32 VI2-70/32	—	—
ВН2-100 50 VI2-100/50	—	—
Г-807 G-807 GG1-0.5/5	—	807
ГГ1-0,5 5 ВГ-1,5 5000, ГГ-1,5/5	—	—
ГГ1-0,5 20 GG1-0.5/20 VG-1.5/5000, GG-1.5/5	—	—
ГГ1-2 16 GG1-2/16	—	—
ГГ1 6 15 GG1-6/15	—	—
ГИ-1 GI-1	—	—
ГИ-3 GI-3	ГИ-3 100 GI-3/100	—
ГИ-4А GI-4A	—	—
ГИ-5Б GI-5B	—	—
ГИ-6Б GI-6V	ЛД-6 LD-6	LD 6
ГИ-7Б GI-7B	ЛД-7 LD-7	LD 7
ГИ-8 GI-8	ПН-3000 PI-3000	—
ГИ-10 GI-10	Г-488 G-488	—
ГИ-11Б GI-11B	ЛД-11 LD-11	LD 11
ГИ-12Б GI-12B	ЛД-12 LD-12	LD 12
ГИ-13 GI-13	ГИ-130 GI-130	—
ГИ-13Б GI-13B	—	—

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Лист 6

Обозначение		
по ГОСТу	старое	иностранных аналогов
ГИ-14Б <i>GI-14B</i>	—	LD 14
ГИ-15Б <i>GI-15B</i>	—	—
ГИ-16Б <i>GI-16B</i>	—	—
ГИ-17 <i>GI-17</i>	Г-480 <i>G-480</i>	NT 99
ГИ-18Б <i>GI-18B</i>	ГИ-300 <i>GI-300</i>	—
ГИ-19Б <i>GI-19B</i>	—	—
ГИ-20 <i>GI-20</i>	—	—
ГИ-21Б <i>GI-21B</i>	—	—
ГИ-22 <i>GI-22</i>	ГС-5 <i>GS-5</i>	—
ГИ-23Б <i>GI-23B</i>	—	—
ГИ-24А <i>GI-24A</i>	—	—
ГИ-30 <i>GI-30</i>	3Е29 <i>3Ye29</i>	3E29
ГИ-70Б <i>GI-70B</i>	ЛД-70 <i>LD-70</i>	LD 70
ГИ-150 <i>GI-150</i>	—	—
ГК-1А <i>GK-1A</i>	ГКО-250 <i>GKD-250</i>	—
ГК-2А <i>GK-2A</i>	ГКР-500 <i>GKR-500</i>	—
ГК-3А <i>GK-3A</i>	Г-100А <i>G-100A</i>	—
ГК-4А <i>GK-4A</i>	—	—
ГК-5А <i>GK-5A</i>	—	—
ГК-6А <i>GK-6A</i>	—	—
ГК-71 <i>GK-71</i>	Г 471 <i>G-471</i>	471A
ГМ-1А <i>GM-1A</i>	М-20 35	—
ГМ-51А <i>GM-51A</i>	М-451	—
ГМ-57 <i>GM-57</i>	УБ 180, М-457 <i>UB-180, M-457</i>	—
ГМ-60 <i>GM-60</i>	М-600	—
ГМ-70 <i>GM-70</i>	М-470	—
ГМ-100 <i>GM-100</i>	М-1000	—
ГМИ-1Б <i>GMI-1B</i>	М-3000	—
ГМИ-2Б <i>GMI-2B</i>	—	—
ГМИ-3 <i>GMI-3</i>	—	—
ГМИ-4Б <i>GMI-4B</i>	—	—
ГМИ-5 <i>GMI-5</i>	—	—
ГМИ-6 <i>GMI-6</i>	—	—

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Лист 7

Обозначение		
по ГОСТу	старое	иностранных стандартов
ГМИ-7 <i>GMI-7</i>	—	—
ГМИ-30 <i>GMI-30</i>	М-30/450	—
ГМИ-83 <i>GMI-83</i>	Г-483 <i>G-483</i>	—
ГМИ-85 <i>GMI-85</i>	Г-485 <i>G-485</i>	—
ГМИ-89 <i>GMI-89</i>	Г-489 <i>G-489</i>	—
ГМИ-90 <i>GMI-90</i>	Г-490 <i>G-490</i>	—
ГР-0,25/1,5	ГР-0,8/1,6; ВГ-0,25/1500	<i>GR-0.8/1.6; VG0.25/1500</i>
ГР-3/400	<i>GR-0.25/1.5</i> <i>GR-3/400</i> ГРС-3 400	<i>GRS-3/400</i>
ГС-1Б <i>GS-1B</i>	—	—
ГС-2Б <i>GS-2B</i>	—	—
ГС-3Б <i>GS-3B</i>	—	—
ГС-4 <i>GS-4</i>	—	—
ГС-9Б <i>GS-9B</i>	ЛД-9 <i>LD-9</i>	LD 9
ГС-90Б <i>GS-90B</i>	ЛД-90 <i>LD-90</i>	LD 90
ГУ-4 <i>GU-4</i>	—	—
ГУ-4А <i>GU-4A</i>	—	—
ГУ-5А <i>GU-5A</i>	Г-5А <i>G-5A</i>	—
ГУ-5Б <i>GU-5B</i>	Г-5РА <i>G-5RA</i>	—
ГУ-8 <i>GU-8</i>	ГК-300 <i>GK-300</i>	—
ГУ-10А <i>GU-10A</i>	Г-10А <i>G-10A</i>	—
ГУ-10Б <i>GU-10B</i>	Г-10РА <i>G-10RA</i>	—
ГУ-11А <i>GU-11A</i>	Г-15А <i>G-15A</i>	—
ГУ-12А <i>GU-12A</i>	Г-880 <i>G-880</i>	880
ГУ-13 <i>GU-13</i>	Г-813 <i>G-813</i>	813
ГУ-15 <i>GU-15</i>	П-15 <i>P-15</i>	—
ГУ-16Б <i>GU-16B</i>	Г-15РА <i>G-15RA</i>	—
ГУ-17 <i>GU-17</i>	—	QQV0,3-10
ГУ-18 <i>GU-18</i>	—	QQV0,3-20
ГУ-21Б <i>GU-21B</i>	—	—
ГУ-22А <i>GU-22A</i>	—	—
ГУ-23А <i>GU-23A</i>	—	—
ГУ-23Б <i>GU-23B</i>	—	—
ГУ-24А <i>GU-24A</i>	—	—

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Обозначение		
по ГОСТу	старое	иностранных аналогов
ГУ-25Б <i>GU-25B</i>	—	—
ГУ-26А <i>GU-26A</i>	—	—
ГУ-27А <i>GU-27A</i>	—	—
ГУ-27Б <i>GU-27B</i>	827P <i>827R</i>	827R
ГУ-28А <i>GU-28A</i>	—	—
ГУ-28Б <i>GU-28B</i>	—	—
ГУ-29 <i>GU-29</i>	829	829-B
ГУ-30А <i>GU-30A</i>	—	—
ГУ-32 <i>GU-32</i>	832	832-A
ГУ-33Б <i>GU-33B</i>	ГУ-33 <i>GU-33</i>	—
ГУ-34Б <i>GU-34B</i>	—	—
ГУ-35Б <i>GU-35B</i>	—	—
ГУ-36Б <i>GU-36B</i>	—	—
ГУ-37Б <i>GU-37B</i>	—	—
ГУ-38А <i>GU-38A</i>	—	—
ГУ-39Б <i>GU-39B</i>	—	—
ГУ-50 <i>GU-50</i>	П-50 <i>P-50</i>	—
ГУ-72 <i>GU-72</i>	—	—
ГУ-80 <i>GU-80</i>	П-800 <i>P-800</i>	—
ГУ-81 <i>GU-81</i>	—	—
ГУ-89А <i>GU-89A</i>	889А	889-A
ГУ-89Б <i>GU-89B</i>	889Б <i>889B</i>	889R-A
ГШ1 <i>GSh-1</i>	—	—
ГШ2 <i>GSh-2</i>	—	—
ГШ3 <i>GSh-3</i>	—	—
Д1А <i>D1A</i>	—	—
Д1Б <i>D1B</i>	—	—
Д1В <i>D1V</i>	—	—
Д1Г <i>D1G</i>	—	—
Д1Д <i>D1D</i>	—	—
Д1Е <i>D1E</i>	—	—
Д1Ж <i>D1Zh</i>	—	—
Д2А <i>D2A</i>	—	—

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Лист 5

Обозначение		
по ГОСТу	старое	иностранных аналогов
Д2Б	D2B	-
Д2В	D2V	-
Д2Г	D2G	-
Д2Д	D2D	-
Д2Е	D2Ye	-
Д2Ж	D2Zh	-
Д2И	D2I	-
Д7А	D7A	-
Д7Б	D7B	-
Д7В	D7V	-
Д7Г	D7G	-
Д7Д	D7D	-
Д7Е	D7Ye	-
Д7Ж	D7Zh	-
Д9А	D9A	-
Д9Б	D9B	-
Д9В	D9V	-
Д9Г	D9G	-
Д9Д	D9D	-
Д9Е	D9Ye	-
Д9Ж	D9Zh	-
Д10	D10	-
Д10А	D10A	-
Д10Б	D10B	-
Д11	D11	-
Д12	D12	-
Д12А	D12A	-
Д13	D13	-
Д14	D14	-
Д14А	D14A	-
Д101	D101	-
Д101А	D101A	-
Д102	D102	-

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Лист 8

Обозначение		
по ГОСТу	старое	иностранным аналогов
Д102А D102A	-	
Д103 D103	-	
Д103А D103A	-	
Д104 D104	-	
Д104А D104A	-	
Д105 D105	-	
Д105А D105A	-	
Д106 D106	-	
Д106А D106A	-	
Д201А D201A	Д8А DBA	
Д201Б D201B	Д8Б DBB	
Д201В D201V	Д8В DBV	
Д201Г D201G	Д8Г DBG	
Д201Д D201D	Д8Д DBD	
Д201Е D201Ye	Д8Е DBYe	
Д201Ж D201Zh	Д8Ж DBZh	
Д201И D201I	-	
Д202 D202	-	
Д203 D203	-	
Д204 D204	-	
Д205 D205	-	
Д206 D206	-	
Д207 D207	-	
Д208 D208	-	
Д209 D209	-	
Д210 D210	-	
Д211 D211	-	
Д301 D301	Д5 D5	
Д302 D302	-	
Д303 D303	-	
Д304 D304	-	
Д305 D305	-	
Д306 D306	-	

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Лист 9

Обозначение		
по ГОСТу	старое	иностранных аналогов
Д307 <i>D307</i>	—	—
Д308 <i>D308</i>	—	—
Д309 <i>D309</i>	—	—
Д401 <i>D401</i>	Д6 <i>D6</i>	—
Д403А <i>D403A</i>	Д52А. ДГ-С.Г <i>D52A, DG-SL</i>	—
Д403Б <i>D403B</i>	Д52Б. ДГ-СН <i>D52B, DG-SN</i>	—
Д403В <i>D403V</i>	Д52В. ДГ-СВ <i>D52V, DG-SV</i>	—
Д405 <i>D405</i>	—	—
Д405А <i>D405A</i>	—	—
Д405АП <i>D405AP</i>	—	—
Д405Б <i>D405B</i>	—	—
Д405БП <i>D405BP</i>	—	IN23D
Д602А <i>D602A</i>	Д53А. ДГ-ПЗ <i>D53A, DG-P3</i>	—
Д602Б <i>D602B</i>	Д53Б. ДГ-П4 <i>D53B, DG-P4</i>	—
Д603 <i>D603</i>	—	—
Д808 <i>D808</i>	—	—
Д808А <i>D808A</i>	—	—
Д809 <i>D809</i>	—	—
Д809А <i>D809A</i>	—	—
Д810 <i>D810</i>	—	—
Д810А <i>D810A</i>	—	—
Д811 <i>D811</i>	—	—
Д811А <i>D811A</i>	—	—
Д813 <i>D813</i>	—	—
Д813А <i>D813A</i>	—	—
Д1001 <i>D1001</i>	—	—
Д1001А <i>D1001A</i>	—	—
Д1002 <i>D1002</i>	—	—
Д1002А <i>D1002A</i>	—	—
Д1003А <i>D1003A</i>	—	—
И1-70/0,8 <i>I1-70/0.8</i>	ИМ-50, И1-50/0,5	—
И1-100 1,5 <i>I1-100/1.5</i>	—	—
И1-100 15 <i>I1-100/15</i>	—	—

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Лист 9

Обозначение		
по ГОСТу	старое	иностранных аналогов
И1-140/0.8	<i>I1-140/0.8</i>	—
И1-200/1.5	<i>I1-200/1.5</i>	—
И1-350/0.8	<i>I1-350/0.8</i>	—
И2-50/1.5	<i>I2-50/1.5</i>	—
К-29	—	—
К-30	—	—
К-31	—	—
К-32	—	—
К-33	—	—
К-34	—	—
К-35	—	—
К-41	—	—
К-42	—	—
К-48	—	—
К-308	—	—
К-309	—	—
ЛИ1 <i>LI1</i>	15.ЛИ1 <i>15LI1</i>	—
ЛИ3 <i>LI3</i>	—	—
ЛИ6 <i>LI6</i>	—	—
ЛИ7 <i>LI7</i>	—	—
ЛИ13 <i>LI13</i>	—	—
ЛИ17 <i>LI17</i>	—	—
ЛИ21 <i>LI21</i>	—	—
ЛИ22 <i>LI22</i>	—	—
ЛИ23 <i>LI23</i>	ЛИ402 <i>LI402</i>	—
ЛИ27 <i>LI27</i>	—	—
ЛИ28 <i>LI28</i>	—	—
ЛИ101 <i>LI101</i>	ЛИ50, ЛИ752 <i>LI50, LI752</i>	—
ЛИ201 <i>LI201</i>	ЛИ25 <i>LI25</i>	—
ЛИ202 <i>LI202</i>	—	—
ЛИ203 <i>LI203</i>	—	—
ЛИ401 <i>LI401</i>	ЛИ26 <i>LI26</i>	—
ЛИ403 <i>LI403</i>	—	—

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Лист 1

объект	старое	иностранных аналогов
ИИ104 LI404		—
ИИ11 LN1		—
ИИ11 LN4		—
ИИ17 LN7	ИИ13M LI3M	—
ИИ18 LNB		—
ИИ14 LP4	KJ-5 KL-5	—
ИИ15 LP5	KJ-6 KL-6	—
ОГ1 OG1	ЕГ1 YeG1	—
ОГ2 OG2	ЕГ2 YeG2	—
ОГ3 OG3	ЕГ3 YeG3	—
ИИ17 P1A	—	—
ИИ1 P1B	—	—
ИИ1 P1V	—	—
ИИ1 P1G	—	—
ИИ1 P1D	—	—
ИИ1 P1Ye	—	—
ИИ1 P1Zh	—	—
ИИ1 P1I	—	—
ИИ2 P2A	ИИ2 P2	—
ИИ2 P2B	—	—
ИИ3A P3A	—	—
ИИ3 P3B	—	—
ИИ3 P3V	—	—
ИИ1 P4A	—	—
ИИ5 P4B	—	—
ИИ5 P4V	—	—
ИИ1 P4G	—	—
ИИ1 P4D	—	—
ИИ5A P5A	—	—
ИИ5 P5B	—	—
ИИ5 P5V	—	—
ИИ1 P5G	—	—
ИИ1 P5D	—	—

ИИ6

Лист 10

Обозначение		
по ГОСТу	старое	иностранные аналоги
П8 <i>P8</i>	—	—
П9 <i>P9</i>	—	—
П9А <i>P9A</i>	—	—
П10 <i>P10</i>	—	—
П11 <i>P11</i>	—	—
П12 <i>P12</i>	—	2N112
П13 <i>P13</i>	П6	2N43
П13А <i>P13A</i>	П6	—
П13Б <i>P13B</i>	П6	—
П14 <i>P14</i>	П6	—
П15 <i>P15</i>	П6	—
П19 <i>P19</i>	—	—
П101 <i>P101</i>	—	—
П101А <i>P101A</i>	—	—
П102 <i>P102</i>	—	—
П103 <i>P103</i>	—	—
П104 <i>P104</i>	—	—
П105 <i>P105</i>	—	—
П106 <i>P106</i>	—	—
П107 <i>P107</i>	—	—
П201 <i>P201</i>	—	—
П201А <i>P201A</i>	—	—
П202 <i>P202</i>	—	—
П203 <i>P203</i>	—	—
П204 <i>P204</i>	—	—
П204А <i>P204A</i>	—	—
П205 <i>P205</i>	—	—
П206 <i>P206</i>	—	—
П207 <i>P207</i>	—	—
П207А <i>P207A</i>	—	—
П208 <i>P208</i>	—	—
П208А <i>P208A</i>	—	—
П209 <i>P209</i>	—	—
П209А <i>P209A</i>	—	—

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ПКБ

Лист 11

Обозначение		
но ГОСТа	старое	иностранных аналогов
П210 P210	—	—
П210А P210А	—	—
П301 P301	—	—
П302 P302	—	—
П401 P401	—	—
П402 P402	—	—
П403 P403	—	—
П404 P404	—	—
П404А P404А	—	—
П405 P405	—	—
П405А P405А	—	—
П406 P406	—	2N113
П407 P407	—	2N114
П410 P410	—	—
П410А P410А	—	—
П411 P411	—	—
П411А P411А	—	—
П501 P501	—	—
П502 P502	—	—
П503 P503	—	—
П601 P601	—	—
Р-1 R-1	—	—
Р-2 R-2	—	—
Р-3 R-3	РБ-6 RB-6	—
Р-4 R-4	—	—
Р-5 R-5	—	—
Р-6 R-6	—	—
С1А S1A	КС1 KS1	—
С1Б S1B	КС2 KS2	—
С1В S1V	КС4 KS4	—
С1Г S1G	КС5 KS5	—
С1Д S1D	КС6 KS6	—
С1Е S1Ye	—	—

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ПКВ

Лист 11

Обозначение		
по ГОСТу	старое	многостраничные аналоги
C2A <i>S2A</i>	—	—
C2B <i>S2B</i>	KC7 <i>KS7</i>	—
C2B <i>S2V</i>	KC8 <i>KSB</i>	—
C2Г <i>S2Г</i>	—	—
C3A <i>S3A</i>	—	—
C3Б <i>S3B</i>	—	—
C3B <i>S3V</i>	—	—
C3Г <i>S3Г</i>	—	—
C3Д <i>S3Д</i>	—	—
C3Е <i>S3Е</i>	—	—
C4A <i>S4A</i>	—	—
C4Б <i>S4B</i>	—	—
C4B <i>S4V</i>	—	—
C4Г <i>S4Г</i>	—	—
C5 <i>S5</i>	—	—
СГ1П <i>SG1P</i>	—	OA2
СГ1П-В <i>SG1P-V</i>	—	—
СГ1П-Е <i>SG1P-Е</i>	—	—
СГ2П <i>SG2P</i>	—	OB2
СГ2С <i>SG2S</i>	75C5-30	VR-75/30
СГ3П <i>SG3P</i>	<i>75S5-30</i>	—
СГ3С <i>SG3S</i>	<i>105S5-30</i>	—
СГ4С <i>SG4S</i>	105C5-30	VR-105/30
СГ5Б <i>SG5B</i>	150C5-30	VR-150/20
СГ5Б-В <i>SG5B-V</i>	<i>150S5-30</i>	—
СГ6С <i>SG6S</i>	—	—
СГ13П <i>SG13P</i>	—	—
СГ14П <i>SG14P</i>	—	—
СГ15П <i>SG15P</i>	—	—
СГ16П <i>SG16P</i>	—	—
СГ201С <i>SG201S</i>	СГ10С <i>SG10S</i>	—
СГ202Б <i>SG202B</i>	СГ11Б <i>SG11B</i>	—
СГ301С <i>SG301S</i>	СГ7С <i>SG7S</i>	—

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ПКБ

Лист 12

Обозначение		
по ГОСТу	старое	иностранных аналогов
SG302S	СГ8С	SG8S
SG303S	СГ9С	SG9S
SG304S	СГ12С	SG12S
SI1G	СТС-1, БГ-1	STS-1, BG-1
SI1BG	СК-11	SK-11
SI1F	NTS-40, TM-40	—
SI2B	НТС-40, ТМ-40	—
SI2BG	СТС-1	STS-1
SI3B	МСТ-18	MST-18
SI3BG	СИ-300	SI-300
SI4BG	—	—
SI5G	—	—
SI6G	—	—
SI7G	—	—
SI8G	—	—
SI9BG	—	—
ST2S	—	—
STSV-3	—	—
STSV-4	—	—
STSV-51	—	—
TG1B	Т1Б	T1B
TG1B-V	—	—
TG1-0.02/0.5	ТГ1-0.02 0.5	—
TG1-0.1/0.3	ТГ1-0.1 0.3	ТГ-0.3 0.3; ТГ-884
TG1-0.1/1.3	ТГ1-0.1 1.3	ТГ-0.5 1.3; ТГ-2050
TG1-0.5/12	ТГ1-0.5 12	ТГ-0.5/1.3; ТГ-2050
TG1-1/0.8	ТГ1-1 0.8	—
TG1-1.5/2	ТГ1-1.5 2	—
TG1-1.6/1	ТГ1-1.6 1	ТГ-8/3; ТГ1-2.5/3
TG1-2.5/4	ТГ1-2.5 4	ТГ-8 3; ТГ1-2.5 3
TG1-2.5/10	ТГ1-2.5 10	—
TG1-2.5/12	ТГ1-2.5 12	ТГ-2.5 12
TG1-3.2/1	ТГ1-3.2 1	ТГ-2.5/12

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ПКС

Лист 12

Обозначение			
по ГОСТу		старое	иностранных аналогов
TG1-5/3	ТГ1-5/3	ТГ-15/3 TG-15/3	—
TG1-6.4/1	ТГ1-6,4 1	—	—
TG1-12.5/1	ТГ1-12,5 1	—	—
TG2-0.1/0.1	ТГ2-0,1/0,1	ТГ-1050 TG-1050	1050
TG2-0.5/12	ТГ2-0,5/12	—	—
TG2-2.5/10	ТГ2-2,5 10	—	—
TG3-0.1/1.3	ТГ3-0,1 1,3	2Д21 2D21	2D21
TG3-2.5/10	ТГ3-2,5 10	—	—
TGI1-3/1	ТГН1 3 1	—	—
TGI1-10/1	ТГН1-10 1	—	—
TGI1-35/3	ТГН1-35 3	—	3C45
TGI1-50/5	ТГН1-50, 5	ТГН-3 TGI-3	—
TGI1-90/8	ТГН1-90, 8	ТГН-90/8, МТИ-4	—
TGI1-130/8	ТГН1-130 8	TGI-90/8, МТИ-4	—
TGI1-130/10	ТГН1-130/10	ТГН-1 TGI-4	—
TGI1-260/12	ТГН1-260 12	TGI-325/16, МТИ-5	—
TGI1-325/16	ТГН1-325, 16	ТГН 325 16, МТИ 5	—
TGI1-400/3.5	ТГН1-400 3,5	ТГН-400 3,5	—
TGI1-400/16	ТГН1-400, 16	TGI-400/3.5	—
TGI2-200/3.5	ТГН2-200, 3,5	TR-15/2, TR1-2.5/2	—
TR1-5/2	ТР1-5/2	ТР-15 2, ТР1-2,5 2	—
TR1-6/15	ТР1-6/15	ТР-20 15	—
TR1-15/15	ТР1-15/15	TR-20/15	—
TR1-40/15	ТР1-40 15	TR-120/15	—
TR1-85/15	ТР1-85 15	ТР-120 15 TG1-400/15, ТР1-130/15	—
TKh1	ТХ1	ТР1-400 15, ТР1-130 15	—
TKh2	ТХ2	РТ-6 RT-6	313C
TKh3B	ТХ3Б	ГГ1-0.012 2,8	—
TKh4B	ТХ4Б	GG1-0.012/28	—
UV-1	УВ-1	—	—
UV-5	УВ-5	—	—
UV-6	УВ-6	—	—
UV-7	УВ-7	—	—

Агрег. 1950

ИРКБ

Обозначение		
по ГОСТу	старое	иностранных аналогов
УВ-14 UV-14	—	—
УВ-204 UV-204	—	—
УВ-205 UV-205	—	—
Ф-1 F-1	— STSV-2A	—
Ф-2 F-2	СЦВ-2A	—
Ф-3 F-3	ЕСЦ-1 VSTs-1	—
Ф-4 F-4	СЦВ-6 STSV-6	—
Ф-5 F-5	ЦВ-6 TSV-6	—
Ф-6 F-6	ВСЦ-2 VSTs-2	—
Ф-7 F-7	МВ-3 MV-3	—
ФД1 FD1	—	—
ФД2 FD2	ФД-1A FD-1A	—
ФД3 FD3	ФД-2A FD-2A	—
ФД4 FD4	ФД-4 FD-4	—
ФТ1 FT1	ФТ-4 FT-4	—
ФЭУ-1 FEU-1	—	—
ФЭУ-2 FEU-2	—	—
ФЭУ-11 FEU-11	—	—
ФЭУ-11A FEU-11A	—	—
ФЭУ-11Б FEU-11B	—	—
ФЭУ-12 FEU-12	—	—
ФЭУ-12A FEU-12A	—	—
ФЭУ-13 FEU-13	—	—
ФЭУ-13A FEU-13A	—	—
ФЭУ-13Б FEU-13B	—	—
ФЭУ-14 FEU-14	—	—
ФЭУ-14A FEU-14A	—	—
ФЭУ-15 FEU-15	—	—
ФЭУ-16 FEU-16	—	—
ФЭУ-17 FEU-17	—	—
ФЭУ-17A FEU-17A	—	—
ФЭУ-18 FEU-18	—	—
ФЭУ-18A FEU-18A	—	—

Апрель 1969

ПКБ

Лист 13

Обозначение		
по ГОСТу	старое	иностранных аналогов
ФЭУ-19 FEU-19	—	—
ФЭУ-20 FEU-20	—	—
ФЭУ-20А FEU-20A	—	—
ФЭУ-22 FEU-22	—	—
ФЭУ-23 FEU-23	—	—
ФЭУ-24 FEU-24	—	—
ФЭУ-25 FEU-25	—	—
ФЭУ-27 FEU-27	—	—
ФЭУ-29 FEU-29	—	—
ФЭУ-31 FEU-31	—	—
ФЭУ-33 FEU-33	—	—
ФЭУ-35 FEU-35	—	—
ФЭУ-40 FEU-40	ФЭУ-3М FEU-3M	—
ФЭУ-41 FEU-41	ФЭУ-2М FEU-2M	—
ФЭУ-42 FEU-42	ФЭУ-1С FEU-1S	—
ФЭУ-43 FEU-43	ФЭУ-1Б FEU-1B	—
ФЭУ-44 FEU-44	ФЭУ-2Б FEU-2B	—
ФЭУ-45 FEU-45	ФЭУ-3Б FEU-3B	—
ФЭУ-46 FEU-46	ФЭУ-Р-5 FEU-R-5	—
ФЭУ-46А FEU-46A	ФЭУ-Р-3 FEU-R-3	—
ФЭУ-47 FEU-47	ФЭУ-1В FEU-1V	—
ФЭУ-48 FEU-48	ФЭУ-1Б1В FEU-1B1V	—
ЦГ-1 Т6Г-1	—	—
ЦГ-3 Т6Г-3	—	—
ЦГ-4 Т6Г-4	—	—
Э1-15/1,5 E1-15/1.5	ГР50-15/1,5 GR50-15/1.5	—
Э1-40/1,5 E1-40/1.5	ГР50-40/1,5 GR50-40/1.5	—
ЭМ-4 ЕМ-4	1Э3П 1E3P	—

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ПКБ

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Designation		Designation	
Old	GOST	Old	GOST
1B12 1VD2	1H7C 1T57S	6Ф6C 6F6S	—
1H1 1N1	1H3C 1N3S	6X1Ж 6Kh1Zh	6Д4Ж 6D4Zh
1H1 1T51	1H1C 1T51S	6X4П 6Kh4P	6Ц4П 6Ts4P
1Э3H 1E3P	ЭМ-4 EM-4	6X5C 6Kh5S	6Ц5C 6Ts5S
2A-1 2A-1	1Ж24Б 1Zh24B	6X6M 6Kh6M	6X6C 6Kh6S
2Д21 2D21	ТГ3-0.1 1.3	7.701A 7L01A	7.701M 7L01M
2Д3C 2D3S	2Д3Б 2D3B	7.7055 7L055	7.7055H 7L055I
2Ж27 2Zh27	2Ж27.1 2Zh27L	8.7M3 8LM3	8.7M3B 8LM3B
2H29 2P29	2H29.1 2P29L	8.701BA 8L01VA	8.701BP 8L01VR
2X1 2Kh1	2X1.1 2Kh1L	8.7029 8L029	8.7029H 8L029I
3E29 2Ye29	ГН-30 GI-30	8.7030 8L030	8.7030H 8L030I
4Д2 4D2	4H6C 4Ts6S	8.7039 8L039	8.7039B 8L039V
4Ц1M 4Ts1M	4Ц6C 4Ts6S	10.7043 10L043	10.7043H 10L043I
5.7038 5L038	5.7038H 5L038I	12H4П 12N4P	6H4П 6N4P
6A10 6A10	6A10C 6A10S	12H10M 12N10M	12H10C 12N10S
6AG7 6AG7	6П9 6P9	12H11M 12N11M	12H11C 12N11S
6AЖ5 6AZh5	6Ж3H 6Zh3P	12X1П 12Kh1P	12H1П 12Ts1P
6AC7 6AS7	6Ж4 6Zh4	13LM31 13LM31	13.7M31B 13LM31V
6Д1A 6D1A	6Д6A 6D6A	13LM31A 13LM31A	13LM4B 13LM4V
6E5 6Ye5	6E5C 6Ye5S	13LM56 13LM56	13.7M56H 13LM56I
6Ж13 6Zh13	6Ж13Л 6Zh13L	13LM57 13LM57	13LM57Д 13LM57D
6H6C 6IGS	6П8C 6PBS	13LM58 13LM58	13.7M58K 13LM58K
6K2П 6K2P	6K4П 6K4P	13.703 13L03	13.703H 13L03I
6K9M 6K9M	6K9C 6K9S	13.704 13L04	13.704H 13L04I
6H8M 6NBM	6H8C 6NBS	13.7036 13L036	13.7036B 13L036V
6H9M 6N9M	6H9C 6N9S	13.7037 13L037	13.7037A 13L037A
6H10M 6N10M	6H10C 6N10S	13.7048 13L048	13.7048H 13L048I
6H11 6N11	6H5C 6N5S	13.7049 13L049	13.7049M 13L049M
6H15 6N15	6H15П 6N15P	13.7051 13L054	13.7054A 13L054A
6П3 6P3	6H3C 6P3S	13.7060 13L060	13.703H 13L03I
6H7 6P7	6H7C 6P7S	13.7061 13L061	13.704H 13L04I
6C1Б 6S1B	6C6Б 6S6B	13H1M 13P1M	13H1C 13P1S
6Ф6M 6F6M		15.7H1 15LI1	7H1 LI-1

1970

HFB

Лист 14

Обозначение		Обозначение	
старое	по ГОСТу	старое	по ГОСТу
18.1M35 18LM35	18.1M35B 18LM35V	Г-5РА G-5RA	ГУ-5Б GU-5B
18.1O47 18LO47	18.1O47A 18LO47A	Г-10А G-10A	ГУ-10А GU-10A
23.1M31 23LM34	23.1M34B 23LM34V	Г-10РА G-10RA	ГУ-10Б GU-10B
23.1O51 23LO51	23.1O51A 23LO51A	Г-15А G-15A	ГУ-11А GU-11A
30.1M 30P1M	30.1M 30P1S	Г-15РА G-15RA	ГУ-16Б GU-16B
31.1M32 31LM32	31.1M32B 31LM32V	Г-100А G-100A	ГК-3А GK-3A
31.1O33 31LO33	31.1O33B 31LO33V	Г-471 G-471	ГК-71 GK-71
75C5-30 75S5-30	СГ2С SG2S	Г-480 G-480	ГН-17 GI-17
105C5-30 105S5-30	СГ3С SG3S	Г-483 G-483	ГМН-83 GMI-83
150C5-30 150S5-30	СГ4С SG4S	Г-485 G-485	ГМН-85 GMI-85
705А 705A	В1-0.1/30 V1-0.1/30	Г-488 G-488	ГН-10 GI-10
827Р 827R	ГУ-27Б GU-27B	Г-489 G-489	ГМН-89 GMI-89
829	ГУ-29 GU-29	Г-490 G-490	ГМН-90 GMI-90
832	ГУ-32 GU-32	Г-813 G-813	ГУ-13 GU-13
889А 889A	ГУ-89А GU-89A	Г-880 G-880	ГУ-12А GU-12A
889Б 889B	ГУ-89Б GU-89B	ГГ1-0.012/2.8 GG1-0.012/2.8	ТХ2 TKh 2
БГ-1 BG-1	СНГ ST1G	ГГ1-0.5/5 GG1-0.5/5	ГГ1-0.5/5 GG1-0.5/5
В13 30 V13/30	В1-0.03/13 V1-0.03/13	ГГ1-1.5/5 GG1-1.5/5	ГН-3 GI-3
В20 20 V20/20	В1-0.02/20 V1-0.02/20	ГН-3 100 GI-3 100	ГН-13 GI-13
В40 100 V40/100	В1-0.02/20 V1-0.02/20	ГН-130 GI-130	ГН-18Б GI-18B
В70 1000 V70/1000	В1-0.1/40 V1-0.1/40	ГН-300 GI-300	ГУ-8 GU-8
ВГ-0.25/1500 VG-0.25/1500	В1-0.3/70 V1-0.3/70	ГК-300 GK-300	ГК-1А GK-1A
ВГ-1.5/5000 VG-1.5/5000	ГР1-0.25/1.5 GR1-0.25/1.5	ГКО-250 GKO-250	ГК-2А GK-2A
ВГ-1.5 5000	ГГ1-0.5/5 GG1-0.5/5	ГКР-500 GKR-500	ГК-2А GK-2A
ВД1 VD1	В1-0.45/40 V1-0.45/40	ГР-0.8/1.6 GR-0.8/1.6	ГР1-0.25/1.5 GR1-0.25/1.5
ВД2 VD2	В1-0.2/40 V1-0.2/40	ГР50-15/1.5 GR50-15/1.5	Э1-15 1.5 E1-15/1.5
ВДН1Д VDE1D	В1-0.2/40 V1-0.2/40	ГР50-40/1.5 GR50-40/1.5	Э1-40 1.5 E1-40/1.5
ВДН3Д VDI3D	В11-100/50 V11-100/50	ГРС-3/400 GRS-3/400	ГР1-3 400 GR1-3/400
ВДН4Д VDI4D	В11-30/25 V11-30/25	ГС-5 GS-5	ГН-22 GI-22
ВН1-20 32 VN1-20/32	В11-70/32 V11-70/32	ГУ-31 GU-31	ГН21С GP21S
ВСЦ-1 VSTs-1	В11-18/32 V11-18/32	Д-1-Д D-1-D	Д301 D301
ВСЦ-2 VSTs-2	Ф-3 F-3	Д5 D5	Д401 D401
Г-3 G-3	Ф-6 F-6	Д6 D6	Д201А D201A
Г-5А G-5A	НН22Б NP22B	Д8А DBA	
	ГУ-5А GU-5A		

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НББ

Лист 15

Обозначение		Обозначение	
старое	по ГОСТу	старое	по ГОСТу
Д8Б DBB	Д201Б D201B	ДИ2-10 DI2-10	2Д1С 2D1S
Д8В DBV	Д201В D201V	ДК-В1 DK-V1	—
Д8Г DBG	Д201Г D201G	ДК-В2 DK-V2	—
Д8Е DBE	Д201Е D201E	ДК-В3 DK-V3	—
Д8Ж DBZh	Д201Ж D201Zh	ДК-В4 DK-V4	—
Д52А D52A	Д403А D403A	ДК-В5 DK-V5	—
Д52Б D52B	Д403Б D403B	ДК-В6 DK-V6	—
Д52В D52V	Д403В D403V	ДК-В7 DK-V7	—
Д53А D53A	Д602А D602A	ДК-И1 DK-I1	—
Д53Б D53B	Д602Б D602B	ДК-И2 DK-I2	—
ДГ-ПЗ DG-P3	Д602А D602A	ДК-С1 DK-S1	—
ДГ-П4 DG-P4	Д602Б D602B	ДК-С2 DK-S2	—
ДГ-С1 DG-S1	—	ДК-С3 DK-S3	—
ДГ-С2 DG-S2	—	ДК-С4 DK-S4	—
ДГ-С3 DG-S3	—	ДК-С5 DK-S5	—
ДГ-С4 DG-S4	—	ДМ1 DM1	6Д3Д 6D3D
ДГ-СЛ DG-SL	Д403А D403A	ДШ2-10 DSh2-10	2Д2С 6D2S
ДГ-СН DG-SN	Д403Б D403B	ЕГ1 YeG1	ОГ1 OG1
ДГ-СВ DG-SV	Д403В D403V	ЕГ2 YeG2	ОГ2 OG2
ДГ-Ц1 DG-Ts1	—	ЕГ3 YeG3	ОГ3 OG3
ДГ-Ц2 DG-Ts2	—	И1-50 0,5 I1-50/0,5	И1-70/0,8 I1-70/0,8
ДГ-Ц4 DG-Ts4	—	ИМ-50 IM-50	И1-70/0,8 I1-70/0,8
ДГ-Ц5 DG-Ts5	—	К-30 K-30	В1-0,06/30 V1-0,06/30
ДГ-Ц6 DG-Ts6	—	КЛ-5 KL-5	ЛП-4 LP-4
ДГ-Ц7 DG-Ts7	—	КЛ-6 KL-6	ЛП-5 LP-5
ДГ-Ц8 DG-Ts8	—	КС1 KS-1	С1А S1A
ДГ-Ц21 DG-Ts21	—	КС2 KS-2	С1Б S1B
ДГ-Ц22 DG-Ts22	—	КС4 KS-4	С1В S1V
ДГ-Ц23 DG-Ts23	—	КС5 KS-5	С1Г S1G
ДГ-Ц24 DG-Ts24	—	КС6 KS-6	С1Д S1D
ДГ-Ц25 DG-Ts25	—	КС7 KS-7	С2Б S2B
ДГ-Ц26 DG-Ts26	—	КС8 KS-8	С2В S2V
ДГ-Ц27 DG-Ts27	—	ЛД 6 LD-6	ГН-6Б GI-6B

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Обозначение		Обозначение	
старое	по ГОСТу	старое	по ГОСТу
ЛД-7 LD-7	ГН-7Б GI-7Б	М-451	ГМ-51А GM-51A
ЛД-9 LD-9	ГС-9Б GS-9Б	М-457	ГМ-57 GM-57
ЛД-11 LD-11	ГН-11Б GI-11Б	М-470	ГМ-70 GM-70
ЛД-12 LD-12	ГН-12Б GI-12Б	М-600	ГМ-60 GM-60
ЛД-70 LD-70	ГН-70Б GI-70Б	М-1000	ГМ-100 GM-100
ЛД-90 LD-90	ГС-90Б GS-90Б	М-3000	ГМН-1Б GMI-1B
ЛНЗМ LI3M	ЛН7 LN7	МВ-3 MV-3	Ф-7 F-7
ЛН25 LI25	ЛН201 LI201	МСТ-18 MST-18	СНББ SI3B
ЛН50 LI50	ЛН101 LI101	МТН-4 MTI-4	ТГН-90Б TGI-90/B
ЛН102 LI402	ЛН23 LI23	МТН-5 MTI-5	ТГН-325/16
ЛН752 LI752	ЛН101 LI101	НТС-40 NTS-40	СНББ SI2B
ЛК-715А LK-715A	18ЛК15 18LK15	П-2 P-2	П-2А P2A
ЛН-31 LP-34	6ВНН 6V1P	П-15 P-15	ГН-15 GU-15
ЛК-741 LK-741	23ЛК41 23LK41	П-50 P-50	ГН-50 GU-50
ЛО-729 LO-729	8.ЛО29Н 8LO29I	П-800 P-800	ГН-80 GU-80
ЛО-730 LO-730	8.ЛО30Н 8LO30I	ПН-3000	ГН-8 GI-8
ЛО-731 LO-731	13.ЛМ31В 13LM31V	PI-3000	БЕР101, BEP101,
ЛО-732 LO-732	31.ЛМ32В 31LM32V	PIM-3	БЕР101А BEP101A
ЛО-733 LO-733	31.ЛО33В 31LO33V	PIM-4	БЕР102 15EP102
ЛО-734 LO-734	23.ЛМ34В 23LM34V	ПНМ-1	БЕР102А 15EP102A
ЛО-735 LO-735	18.ЛМ35В 18LM35V	РБ-6 RB-6	Р-3 R-3
ЛО-736 LO-736	13.ЛО36В 13LO36V	РТ-6 RT-6	ТХ1 TKh1
ЛО-737 LO-737	13.ЛО37А 13LO37A	СГ7 SG7	СГ301С SG301S
ЛО-738 LO-738	5.ЛО38Н 5LO38I	СГ8 SG8	СГ302С SG302S
ЛО-739 LO-739	8.ЛО39В 8LO39V	СГ9 SG9	СГ303С SG303S
ЛО-743 LO-743	10.ЛО43Н 10LO43I	СГ10С SG10S	СГ201С SG201S
ЛО-747 LO-747	18.ЛО47А 18LO47A	СГ11Б SG11B	СГ202Б SG202B
ЛО-748 LO-748	13.ЛО48Н 13LO48I	СГ12С SG12S	СГ304С SG304S
ЛО-749 LO-749	13.ЛО49М 13LO49M	СН300 SI300	СН3БГ SI3BG
ЛО-751 LO-751	23ЛО51А 23LO51A	СК-11 SK-11	СН1БГ SI1BG
ЛО-754 LO-754	13ЛО54А 13LO54A	СТС-1 STS-1	СН1Г, СН2БГ
М-20/35 M-20/35	ГМ-1А GM-1A	СНВ-2А STSV-2A	Ф-2 SI1G, SI2BG
М-30/450 M30/450	ГМН-30 GMI-30	СНВ-6 STSV-6	Ф-4 F-4

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Обозначение		Обозначение	
старое	по ГОСТу	старое	по ГОСТу
ТГБ T18	ТГБ TG18	TR1-2.5/2	TR1-5/2 TR1-5/2
TG-0.3/0.3	TG1-0.1/0.3	TR1-2.5 2	TR1-85/15 TR1-85/15
ТГ-0.3 0.3	ТГ1-0.1 0.3	TR1-130/15	
TG-0.5/1.3	TG1-0.1/1.3	TR1-130 15	
ТГ-0.5 1.3	ТГ1-0.1 1.3	UB-180	
TG1-2.5/3	TG1-2.5/4	УБ-180	ГМ-57 GM-57
ТГ1-2.5 3	ТГ1-2.5 4	FD-1A	ФД2 FD2
TG-2.5/12	TG1-2.5/12	FD-2.7	ФД3 FD3
ТГ-2.5 12	ТГ1-2.5 12	ФД-2.7	ФД4 FD4
TG-8/3	TG1-2.5/4	ФД-4 FD-4	ФТ1 FT1
ТГ-8 3	ТГ1-2.5 4	ФТ-4 FT-4	
TG-15/3	TG1-5/3	ФЭУ-1Б FEU-1B	ФЭУ-43 FEU-43
ТГ-15 3	ТГ1-5 3	FEU-1B1V	ФЭУ-48 FEU-48
TG-400/15	TR1-85/15	ФЭУ-1Б1В	ФЭУ-47 FEU-47
ТГ-400 15	TR1-85 15	ФЭУ-1В FEU-1V	ФЭУ-42 FEU-42
TG-884	TG1-0.1/0.3	ФЭУ-1С FEU-1S	ФЭУ-44 FEU-44
ТГ-884	ТГ1-0.1 0.3	ФЭУ-2Б FEU-2V	ФЭУ-41 FEU-41
TG-1050	TG2-0.1/0.1	ФЭУ-2М FEU-2M	ФЭУ-45 FEU-45
ТГ-1050	ТГ2-0.1 0.1	ФЭУ-3Б FEU-3B	ФЭУ-40 FEU-40
TG-2050	TG1-0.1/1.3	ФЭУ-3М FEU-3M	ФЭУ-46А FEU-46A
ТГ-2050	ТГ1-0.1 1.3	ФЭУ-Р-3 FEU-R-3	ФЭУ-46 FEU-46
TGI-3	TGI1-50/5	ФЭУ-Р-5 FEU-R-5	1П24Б 1P24B
ТГН-3	ТГ1-50 5	Ц-1 Ts-1	1Ж29Б 1Zh29B
TGI-4	TGI1-130/10	ЦБ-6 TsV-6	Ф-5 F-5
ТГН-4	ТГ1-130 10	V-1906-D	B1-0,075/2,5 V1-0.075/2.5
TGI-90/8	TGI1-90/8	VU-III-D	B1-0,05/12 V1-0.05/12
ТГН-90 8	ТГ1-90 8	VT-127-D	4П10С 4P10S
TGI-325/16	TGI1-325/16	Z-62-D	6Ж6С 6Zh6S
ТГН-325 16	ТГ1-325 16		
TGI-400/3.5	TGI1-400/3.5		
ТГН-400 3.5	ТГ1-400 3.5		
TM-1	6C5Д 6S5D		
ТМ-1	6С5Д 6S5Д		
TM-40	CH2Б SI2B		
ТМ-40	СН2Б SI2Б		
TO-1	10Ж12С 10Zh12S		
ТО-1	10Ж12С 10Zh12С		
TO-2	10П12С 10P12S		
ТО-2	10П12С 10P12С		
TO-3	7Ж12С 7Zh12S		
ТО-3	7Ж12С 7Zh12С		
TO-4	7П12С 7P12S		
ТО-4	7П12С 7P12С		
TR-15/2	TR1-5/2 TR1-5/2		
ТР-15 2	TR1-5/2 TR1-5/2		
TR-20/15	TR1-6/15 TR1-6/15		
ТР-20 15	TR1-6/15 TR1-6/15		
TR-120/15	TR1-40 15 TR1-40/15		
ТР-120 15	TR1-40 15 TR1-40/15		

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DEFINITIONS OF CERTAIN TERMS USED IN THE HANDBOOK

The definitions given below refer to certain terms for many classes of vacuum-tube devices covered in the handbook.

Internal resistance — the ratio of a change in plate voltage to the change in plate current caused by it with the voltages on the remaining electrodes kept constant.

Output power, pulsed — the mean value of the power developed in a load during a pulse.

Note. The power in a pulse is taken to equal the product of the mean power measured calorimetrically, or in some other manner, by a quantity that is a reciprocal of the duty factor.

Dynamic operation of a device — changing the voltage on electrodes over time (with the exception of the filament voltage), determining the currents of the electrodes, which also change with time.

Dynode — an emitter of secondary electrons.

Length of a current pulse — the interval of time between the initial and final instants of a pulse, assuming that the final instant is defined by the point equal in value to one half of the maximum peak pulse value.

Note. In order to determine the maximum instantaneous amplitude of a pulse, we do not take into account very short and high horns on the edges of the pulse.

Life (service life) — the number of hours after which one of the

basic tube constants, for which special values have been established as a criterion of lifetime, goes beyond the limits of these values, or the device itself becomes unsuitable for normal service for other reasons.

Input capacitance — the static interelectrode capacitance of the control grid with respect to those electrodes upon which, under normal tube operating conditions, there are no AC voltages at frequencies operating in the control-grid circuit.

Output capacitance — the static interelectrode capacitance of the plate with respect to those electrodes upon which, under tube operating conditions, there are almost no AC voltages of the same frequencies as the alternating voltage across the tube load.

(Above material published April 1959, PKB, Terminology, Sheet 1)

Transfer capacitance — static interelectrode capacitance between plate and control grid.

Natural cooling — cooling of a vacuum-tube device by the surrounding air, without forced application of air to the cooled parts.

Grid ion current (ion component of grid current) — a component of the grid current caused by ions incident upon the grid.

Cathode core — the base for a complex cathode to which an active coating is applied.

Traveling-wave tube attenuation constant — the ratio of the signal power at the amplifier output to a traveling-wave tube (LBV) to the signal power at its input, in the absence of an electron flow in the LBV delay line.

The attenuation constant indicates the magnitude of signal attenuation by the delay line of the LBV in the absence of an electron flow in it.

The attenuation constant is normally expressed in decibels.

Noise nonlinearity factor — a quantity, expressed in percent, determining the degree of deviation from linearity of the function relating the plate current of a noise diode to its noise power.

Amplification factor — the ratio of plate and grid voltage increments causing identical variations in plate current.

Duty factor — the ratio of the length of a pulse to the length of the space between two successive pulses.

Passband factor — the ratio of the slope of a characteristic curve to the sum of the input and output capacitances.

Noise factor of traveling-wave tube — the ratio of the power of fluctuating noise at the output of a LBV amplifier to the power of the fluctuating noise at the output of an ideal ("noiseless") amplifier, possessing the same gain and bandwidth, as the actual amplifier in the LBV, provided that the input circuits of both amplifiers are connected to matched, pure resistances, at a temperature of 293°K.

$$F = (S_{vkh}/P_{vkh})/(S_{vykh}/P_{vykh}) = P_{vykh}/K_u \cdot P_{vkh} = P_{vykh}/P_{vykh id}$$

where F is the noise factor; S_{vkh} is the signal power at the input of the LBV amplifier; S_{vykh} is the signal power at the output of the LBV amplifier; P_{vkh} is the power of the fluctuating noise at the input of the LBV amplifier; P_{vykh} is the power of the fluctuating noise at the output of the LBV amplifier;

(Above material published April 1959, PKB, Terminology, Sheet 1)

$K_u = S_{vykh}/S_{vkh}$ is the power gain of the amplifier of the LBV;

$P_{vykh id} = K_u \cdot P_{vkh}$ is the power of the fluctuating noise at the output of an ideal ("noiseless") amplifier.

Criterion of lifetime — arbitrarily adopted extreme value of a constant which may be obtained in testing a device for lifetime. When this constant deteriorates further, the instrument is considered to be

unsuitable for normal service.

Grid-plate transconductance — the magnitude of the change in plate current in milliamperes for a one-volt change in control grid voltage.

Conversion transconductance — the effective value of the alternating component of the intermediate-frequency current in milliamperes, set up in a tube by an effective signal voltage with an amplitude of one volt.

Sharp-cutoff tube — a tube whose plate-grid curve shows a sharp drop to zero current.

Remote-cutoff tube — a tube whose plate-grid curve has a special lengthened shape at small values of plate currents, which makes it possible to control the gain by varying the DC component of the control-grid voltage.

Output power (radio-frequency) — the maximum RF power which may be developed in the plate circuit of a tube operating under CW conditions (class C) for rated filament voltage and maximum plate voltage. The output power is defined as the difference between the applied DC power, and the power dissipated at the plate.

Note. In tables and handbook sheets, where the frequency is especially mentioned, the value of the output power is shown for the maximum working frequency.

Maximum peak inverse plate voltage — the maximum amplitude of the difference in voltages between the cathode and plate, characterized by the presence on the cathode of a higher voltage with respect to the plate.

Maximum plate voltage — the maximum permissible DC voltage between plate and cathode of a tube, applied from a power source when the tube is operated under dynamic and static conditions.

Maximum input power — the maximum DC power that may be supplied to the tube under given conditions.

Pulsed grid voltage — the algebraic sum of the peak excitation pulse voltage and the DC bias voltage.

Electrode voltage — the difference in potential between the leads to a given electrode and the cathode.

Electrode null current — the current in an electrode under a given static regime where the voltage on the basic control electrode is zero.

(Above material published April 1959, PKB, Terminology, Sheet 2)

Grid back current — the current in a grid that is negative with respect to the cathode, equal to the sum of all currents flowing in the grid circuit: the ion, leakage, thermionic, and other current components.

Peak plate voltage with plate modulation — the maximum value of the plate voltage, varying in time, with plate modulation, equal to the sum of the DC power-supply voltage and the amplitude of the modulating voltage.

Input power — the DC power supplied to the plate circuit of a tube from the power-supply source.

Forced cooling — cooling of a vacuum-tube device by forced application of air or liquid to the cooled sections.

Grid penetrance — a quantity that is roughly equal to the reciprocal of the corresponding amplification factor.

Filament starting current — the maximum filament current during the time interval from the instant that filament voltage is applied to the cold (unheated) cathode to the instant that the cathode working temperature is reached.

Note. The working temperature of a cathode corresponds to the

steady-state value of filament current at rated filament voltage.

Pulse density — the reciprocal of the duty factor.

Electrode insulation resistance — the resistance of the insulation of a given electrode with respect to all other electrodes (with the cathode unheated).

Spectral density of noise power for noise generator — the noise power developed across a load matched to the generator in a 1-cps frequency band, and defined by the formula:

$$P_n = k (T_g - T_0)$$

where k is the Boltzmann constant, equal to $1.38 \cdot 10^{-23}$ watts/degree-cps; T_g — equivalent temperature of noise generator in $^{\circ}\text{K}$; $T_0 = 293^{\circ}\text{K}$.

The relative temperature of a noise generator is defined by the relationship:

$$N = \frac{T_g - T_0}{T_0}$$

and thus, the spectral density may be found from the formula:

$$P_n = N \cdot k \cdot T_0$$

The quantity kT_0 equals the noise power for a resistance equal to the output resistance of the generator, developed across a matched load in a 1-cps frequency band at a resistance temperature T_0 .

(Above material published April 1959, PKB, Terminology, Sheet 2)

Static operation of a device — constant voltages on the electrodes determining the currents (which are also constants) of all electrodes.

Thermal shock — a sharp variation in the temperature of the ambient medium for a device (as a rule, from 100 to 0°C) occurring over a period of fractions of a second.

Grid thermal current (thermionic component of grid current) — a grid-current component caused by electrons emitted by the grid owing

to heating.

Plate current, pulsed — the value of the amplitude of an equivalent current pulse, i.e., an absolute square wave, having the same length as the pulse, and the same average value for the amplitude as does the given pulse.

Cathode current — the current, equal to the algebraic sum of all currents in other electrodes, measured in the portions of the external circuit common to all of these electrodes.

Leakage current in grid circuit — the grid-current component due to imperfect grid insulation with respect to other electrodes.

Electrode current — the current set up by all free elementary charges (electrons and ions), incident upon a given electrode, or leaving it, as well as by the varying electromagnetic fields in which the electrode lies, measured directly at the lead from the given electrode.

Cathode emission current — the current from the cathode to the tube electrodes, connected together, with rated filament voltage, and voltages on the remaining electrodes as indicated especially in the technical specifications.

Cathode emission current, pulsed — mean value of cathode emission current during a pulse.

(Above material published April 1959, PKB, Terminology, Sheet 3)

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List of Transliterated Symbols

- | | |
|----|--|
| 45 | ЛБВ = LBV = Lampa Begushchey Volny = Traveling-Wave Tube |
| 46 | вх = vkh = vkhod = input; вых = vykh = vykhod = output |
| 46 | у = u = usileniye = gain; ид = id = ideal'nyy = ideal |

RECOMMENDATIONS FOR THE APPLICATION OF ELECTRON-TUBE DEVICES

The equipment designer must be guided by the following recommendations:

1. The filament voltage of an electron-tube device should equal its rated value when the equipment is serving under normal operating conditions.

Deviations from the nominal filament voltage, as a result of power-supply voltage fluctuations or the action of other factors, should not exceed values specified in the handbook sheets, and should be brief.

2. Electron-tube devices operate most reliably in the equipment with rated values of electrode voltages.

If these rated voltages are exceeded, there will be a decrease in tube life, and thus in critical cases, we recommend that measures be taken to stabilize or carry out appropriate regulation of the electrode voltages.

3. The equipment should be capable of operating when any electron-tube devices are used that have any constants lying within limits of permissible deviations.

If this condition is not met, it will be necessary to make a special choice of corresponding tubes when they are replaced in the equipment, which is impermissible, since it excludes the possibility of interchangeability.

4. The values of electron-tube constants vary in the course of their service, and at the end of their useful life, constants may drop to values specified as criteria for tube life.

A drop in the values of electrical constants should be taken into account in designing equipment, so that the equipment will operate stably over the entire useful lifetime of the tube.

5. When operating electron tubes in equipment, no more than one maximum value should be reached simultaneously; the maximum values are given in the section "Maximum Permissible Operating Data" (unless special cases are specified), since this will sharply decrease tube life. (Above material published April 1959, PKB, Recommendations, Sheet 1)

6. Exceeding, even briefly, the values shown in the "Maximum Permissible Operating Data" section, is impermissible, since this may cause damage to the tube, or may sharply decrease its life.

7. Electron-tube devices are not guaranteed with respect to individual service life. Thus, in especially critical equipment, it is desirable to provide for the possibility of rapid tube replacement (including replacement of individual tube units), or other methods for providing uninterrupted operation of the equipment.

(Above material published April 1959, PKB, Recommendations, Sheet 1)

BASE DIAGRAMS

OCTAL SOCKETS

Classification and Basic Dimensions

Octal bases, depending upon type, are divided into two classes: can-type bases and button-type bases.

The standard designation for an octal socket, in accordance with official standard NIO.537.000, consists of the word "base," the letter "Ts," and the number "1," characterizing the type of base (octal), with the numbers after the dash indicating the type of base (1 - button, 2, 3, 4, etc. - can-type, in accordance with Table 1); next, following a dash there are a number and letter indicating the number and arrangement of the pins, in accordance with Table 2, where the + (plus) indicates the presence, and the - (minus) - the absence of a pin in a given position in the base.

Example. A button-type octal base with eight pins is designated:

Base Ts1-1-8A

A can-type octal base, 32 - 0.8 mm in diameter, lacking the eighth pin, is designated:

Ts1-4-7V

The basic dimensions of octal bases for electron-tube devices are given by official standard NIO.537.000, and are shown in drawings 1 and 2. The arrangement and connection dimensions for the pins correspond to RSh5 of GOST 7842-58.

(Above material published April 1959, PKB, Bases, Sheet 1)

TABLE 1

Размеры покода	2 Тип покола-станка					
	3 Ц1-2	3 Ц1-3	3 Ц1-4	3 Ц1-5	3 Ц1-6	3 Ц1-7
	4 Размеры, мм					
Высота* 5	24	25	36	41	33	41
Диаметр 6	25 ± 0.2	$27^{+0.3}_{-0.2}$	$32^{+0.3}_{-0.2}$	$34.5^{+0.3}_{-0.2}$	$38^{+0.3}_{-2.0}$	$38^{+0.3}_{-0.2}$
Диаметр ок- ружности рас- положения штирьков 7	17.5 ± 0.2	17.5 ± 0.2	17.5 ± 0.2	17.5 ± 0.2	17.5 ± 0.2	22 ± 0.2
Высота ци- линдрической части 8	10 ± 0.3	11 ± 0.3	22 ± 0.3	27 ± 0.3	19 ± 0.3	27 ± 0.3

1) Base dimensions; 2) type of base — can; 3) Ts; 4) dimensions, mm; 5) height; 6) diameter; 7) diameter of pin circle; 8) height of cylindrical section.

Notes: 1. Ts1-2 and Ts1-5 bases, regardless of the number of pins and their arrangement, should not be utilized for newly designed electron tubes.

2. Reference dimensions are indicated by an asterisk.

TABLE 2

Условное обозначение вида расположения штырьков	2. Вид штырьков							
	1	2	3	4	5	6	7	8
8A	+	+	+	+	+	+	+	+
7A	+	+	+	+	+	-	+	+
7Б	-	+	+	+	+	+	+	+
3 7В*	+	+	+	+	+	+	+	-
4 7Г*	+	+	+	-	+	+	+	+
6A	+	+	+	-	+	-	+	+
5 6Б	-	+	+	+	+	-	+	+
6 6В*	-	+	+	-	+	+	+	+
7 6Г*	+	+	+	+	+	-	+	-
8 6Д*	+	+	+	+	-	-	+	+
5A	-	+	+	+	+	-	+	-
9 5Б	+	+	-	+	-	-	+	+

1) Conventional designation for arrangement of pins; 2) number of pins; 3) 7V*; 4) 7G*; 5) 6B; 6) 6V*; 7) 6G*; 8) 6D*; 9) 5B.

(Above material published April 1959, PKB, Bases, Sheet 1)

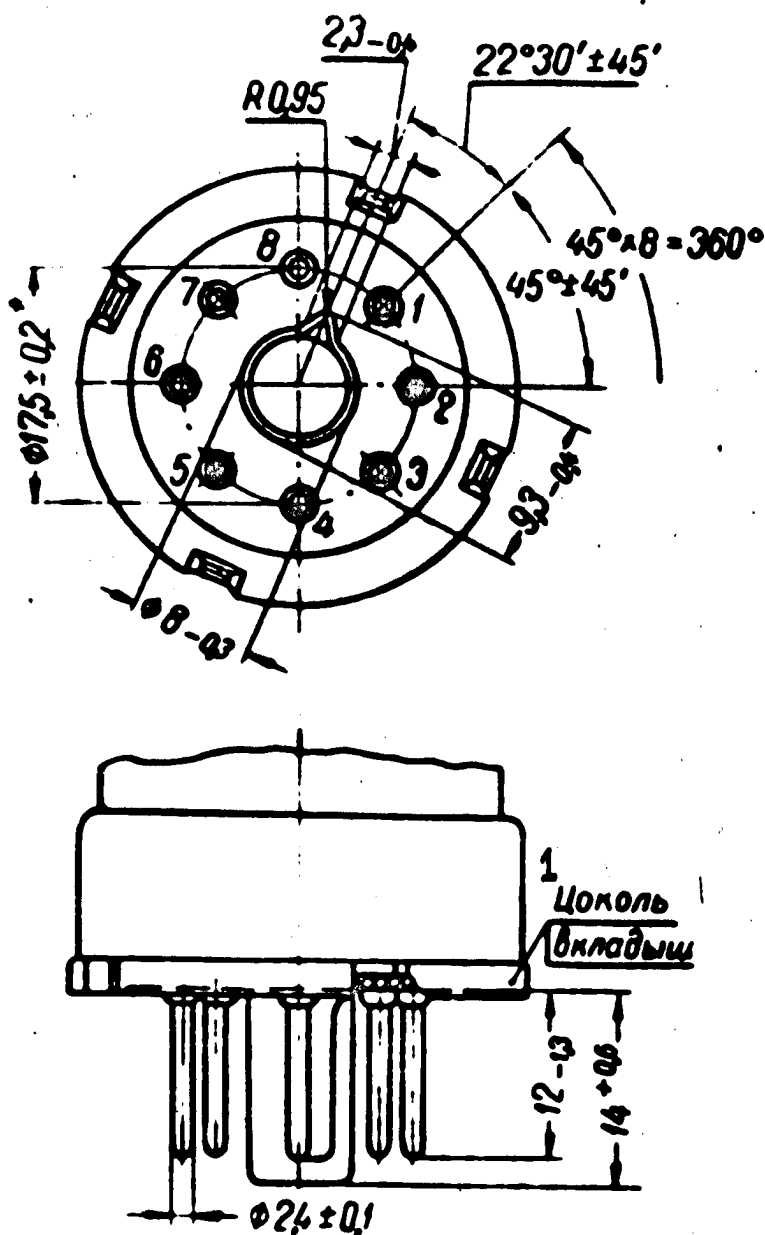
TABLE 2 (Continued)

Условное обозначение вида расположения штырьков	2 №№ штырьков							
	1	2	3	4	5	6	7	8
3 5В*	+	+	-	+	+	-	+	-
4 5Г*	+	+	-	+	-	+	-	+
5 5Д*	+	+	+	+	-	-	+	-
6 5Е*	-	+	+	-	+	-	+	+
7 5Ж*	-	+	-	+	+	-	+	-
4А	-	+	-	-	+	-	+	-
8 4Б	-	+	+	+	-	-	+	-
9 4В	-	+	-	+	-	-	-	+
10 4Г	+	-	+	-	-	+	-	+
11 4Д*	-	+	+	-	+	-	-	+
12 4Е*	-	+	-	-	-	-	+	+
13 4Ж*	-	+	-	+	-	-	+	-
4К*	+	-	-	+	-	-	+	-
14 4Л*	-	+	+	-	+	-	+	-
4М*	+	-	-	+	-	+	-	+
15 4Н*	-	+	+	-	-	+	+	-

1) Conventional designation for pin arrangement; 2) number of pins; 3) 5V*; 4) 5G*; 5) 5D*; 6) 5Ye*; 7) 5Zh*; 8) 4B; 9) 4V; 10) 4G; 11) 4D*; 12) 4Ye*; 13) 4Zh*; 14) 4L*; 15) 4N*.

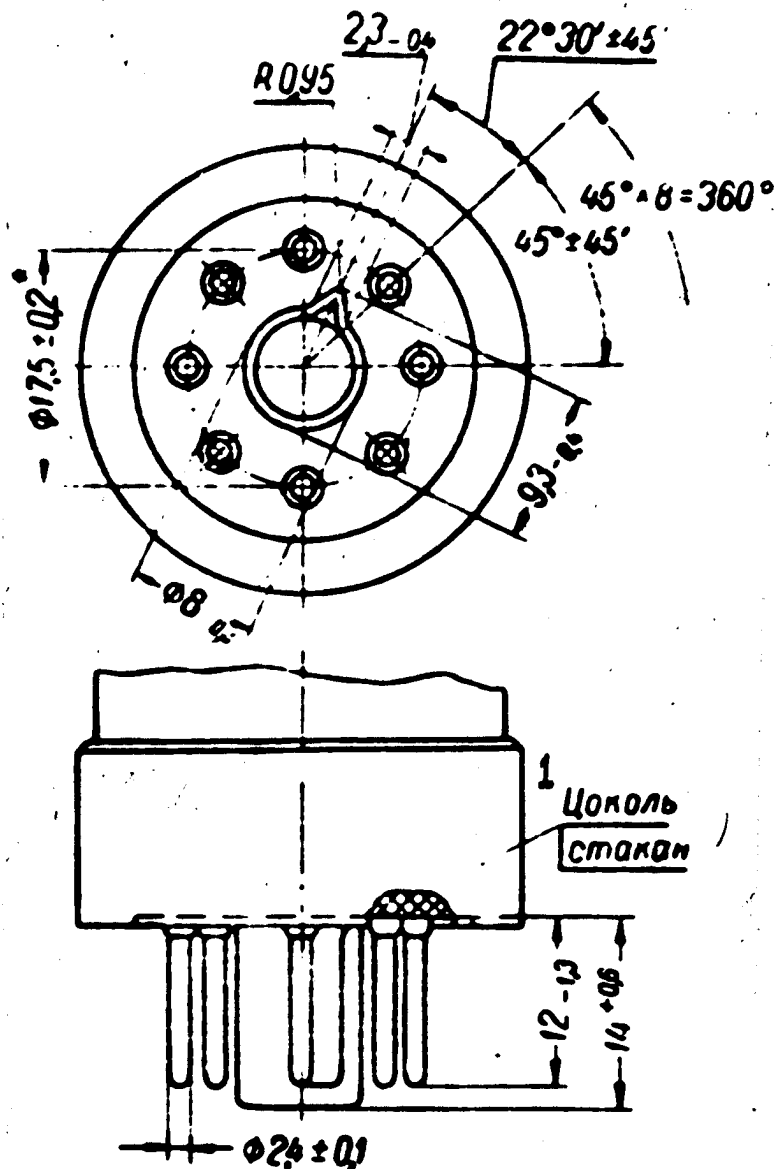
Note. The asterisk indicates that the given type of pin arrangement in the base is not used in newly designed electron tubes.

(Above material published April 1959, PKB, Bases, Sheet 2)



Drawing 1. Type Ts1-1 button base. 1) Button base.
 Notes. 1. Maximum base diameter 33 mm. 2. Reference dimension indicated by asterisk.

(Above material published April 1959, PKB, Bases, Sheet 2)



Drawing 2. Types Tsl-2, Tsl-3, Tsl-4, Tsl-5, Tsl-6, Tsl-7 can-type bases (see Table 1). 1) Can-type base.

(Above material published April 1959, PKB, Bases, Sheet 3)

FOURTEEN-PIN SOCKET

Basic Dimensions

In accordance with official standard VN MPSS 918-52, the conventional designation for the 14-pin plastic base designed for cathode-ray tubes consists of the word "base", the letter Ts, the number 3, indicating the type of base (14-pin), a dash, a number and a letter (14, 12A, or 8A), indicating the number of pins in the base and the order of their arrangement (Table 1). Here the "+" sign (plus) indicates the presence "-" sign (minus) indicates the absence of a pin in a given position in the base.

Example. A 14-pin base lacking the sixth and thirteenth pins is designated:

Base Ts3-12A

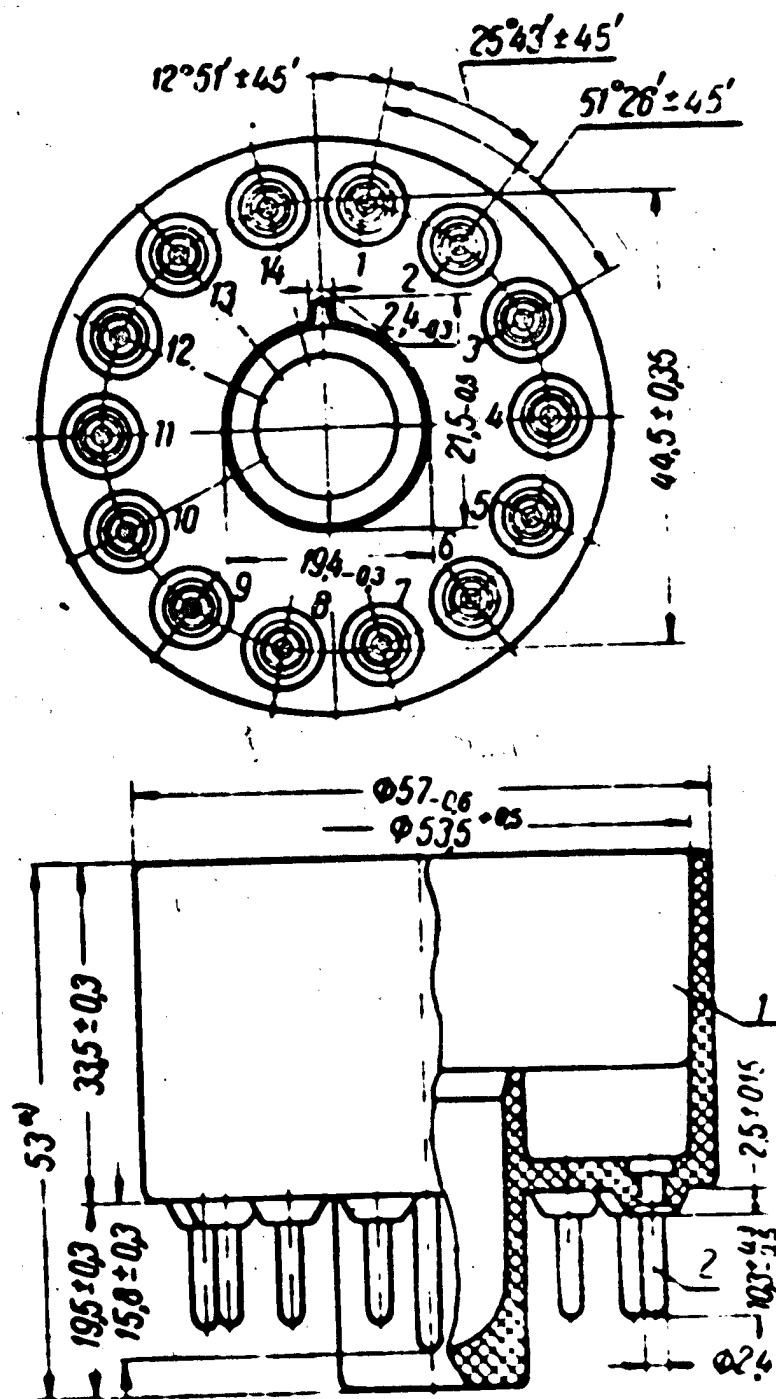
The basic dimensions of a 14-pin base should correspond to Drawing 1. The arrangement and connection dimensions of the pins should correspond to RSh10 GOST 7842-58.

TABLE 1

1) условное обозначение типа расположения штырьков	2) № штырьков													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
14	.	.	.	.	.	.	.	.	.	.	.	.	.	.
12A	.	.	.	.	.	.	.	.	.	.	.	.	.	.
8A	.	.	.	.	.	.	.	.	.	.	.	.	.	.

1) Conventional designation for pin arrangement; 2) pin numbers.

(Above material published April 1959, PKB, Bases, Sheet 3)



Drawing 1. Fourteen-pin socket. 1) Base blank; 2) pin.
Note. Reference dimension indicated by asterisk.

(Above material published April 1959, PKB, Bases, Sheet 4)

LOCKTAL BASE SHIELD

Basic Dimensions

Official standard VN MPSS 920-52 established the basic dimensions for metal locktal base-shields, designed for low-power transmitting and receiving tubes.

The base designation consists of the words "base-shield," the letter Ts, and the number 4, defining the type of base (locktal, with shield), a dash, and a number indicating the base dimensional type.

Example. A base-shield with a 46.5-mm high shield is designated as:

Base-shield Ts4-1

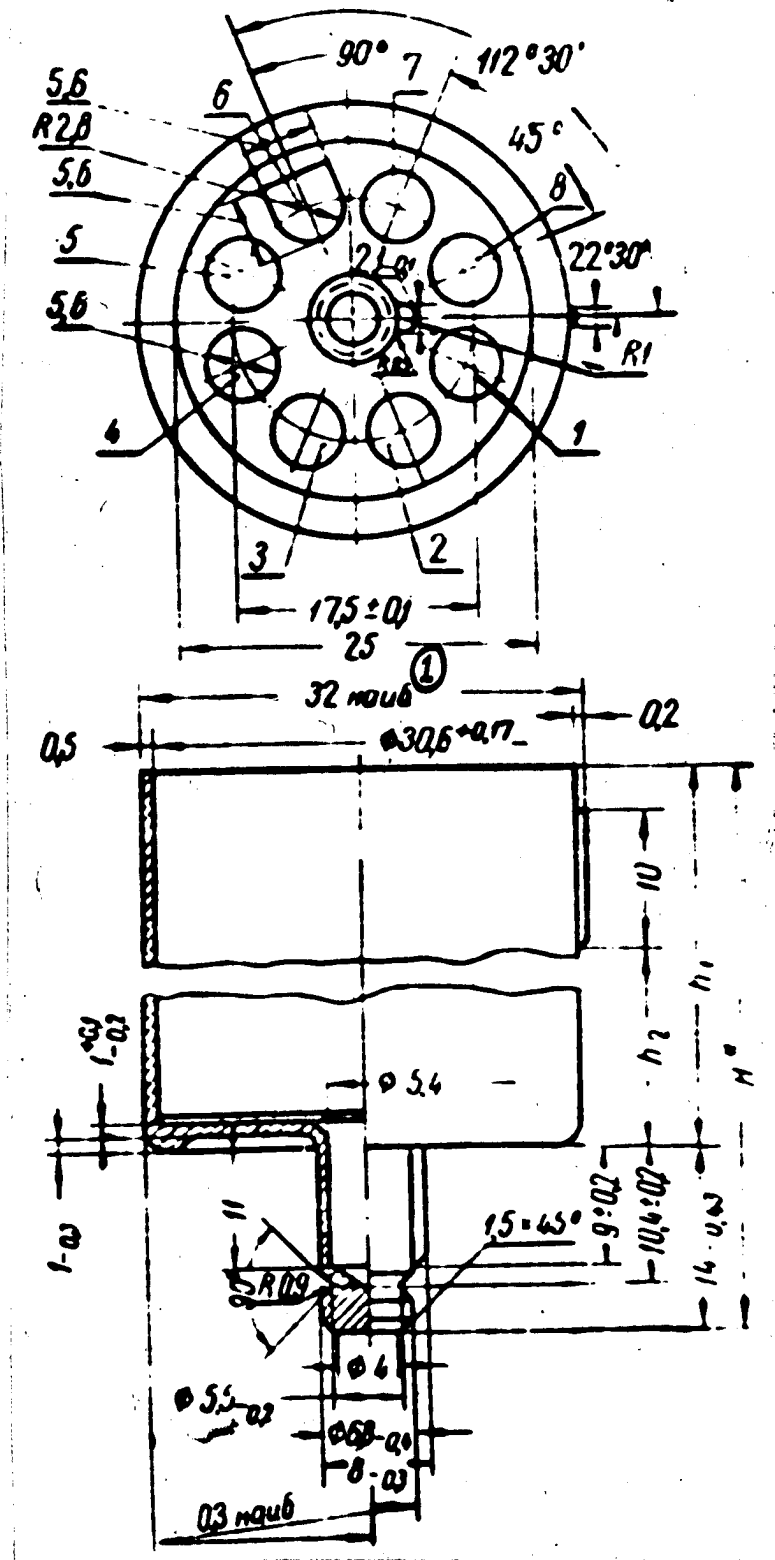
The basic base dimensions should correspond to Drawing 1 and Table 1. The arrangement and connection dimensions of the pins correspond to RSh7 GOST 7842-58.

TABLE 1

1 Обозначение цоколя	2 Размеры в мм		
	h_1	h_2	H^*
3 114-1	46.5 0.5	31.5	60.5
4 114-2	53 0.5	38	67

1) Base designation; 2) dimensions in mm; 3) Ts4-1; 4) Ts4-2.
Note. Reference dimension indicated by asterisk.

(Above material published April 1959, PKB, Bases, Sheet 4)

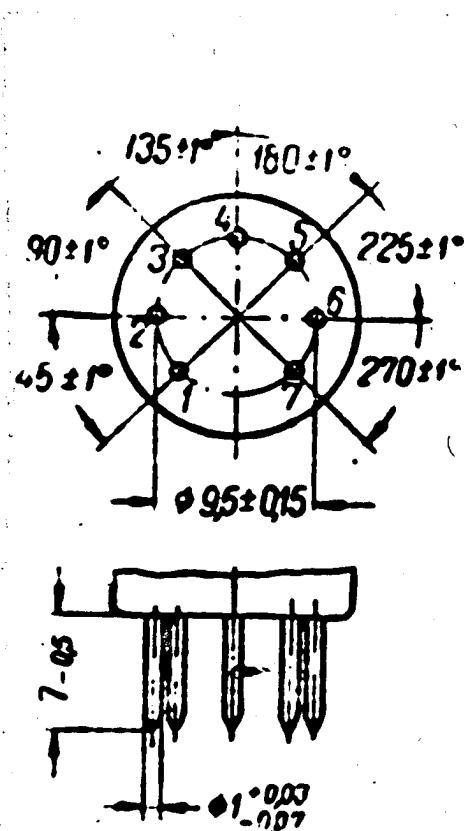


Drawing 1. 1) Maximum.

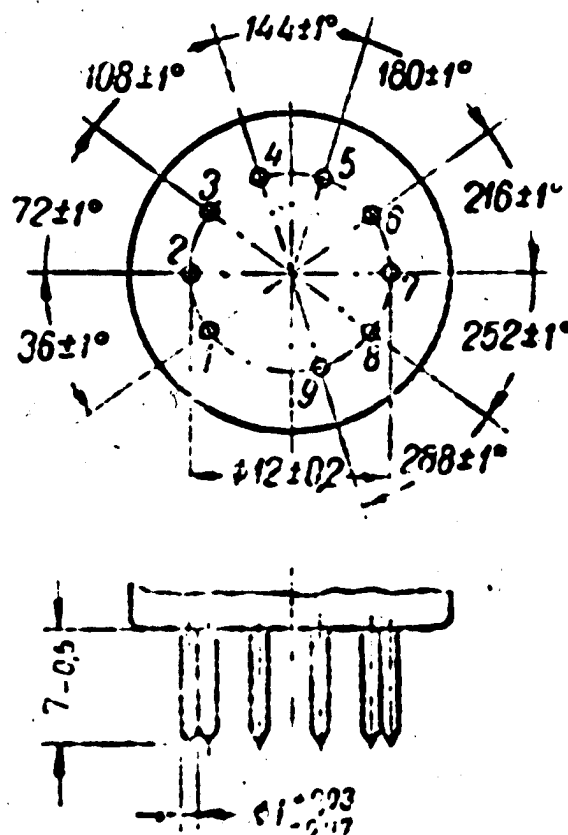
(Above material published April 1959, PKB, Bases, Sheet 5)

ARRANGEMENTS AND DIMENSIONS OF PINS FOR MINIATURE GLASS TUBES

The arrangement and connection dimensions for the pins of miniature glass receiving tubes correspond to RSh4 and RSh8 GOST 7842-58, and are shown in Drawings 1 and 2.



Drawing 1



Drawing 2

(Above material published April 1959, PKB, Miniature-tube pins, Sheet 1)

EXTERNAL LEADS AND CAPS

Types and Dimensions

Official standard NIO.730.000 establishes the types and sizes for external leads and caps designed for low-power electron-tube devices.

Depending upon design, leads and caps are classified into three types:

- a) lead-cap without shaped flange — VK1;
- b) lead-cap with shaped flange — VK2;
- c) lead-cap with shoulder — VK3 (used only for cathode and filament lead of transmitting tubes in metallic-ceramic envelope).

Types and dimensions of leads and caps are shown in Figs. 1, 2, and 3.

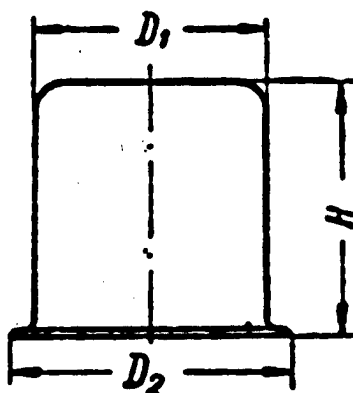


Fig. 1. Type VK1 lead-cap.

/	Условное обозначение типоразмера	D_1	D_2	H
		мм	мм	мм
2	BK1-1 и BK1-2	9 _{-0,2}	11 _{-0,43}	10 _{-0,36}
3	BK1-3	14 _{-0,24}	15 _{-0,43}	13 _{-0,43}

1) Conventional designation for dimension type; 2) VK1-1 and VK1-2; 3) VK1-3.

Notes: 1. Dimension types VK1-1 and VK1-2 differ only in the

diameter of the central hole through which the electrode is passed and soldered.

2. Type VK1-3 caps are not specified for newly developed electron tubes.

(Above material published April 1959, PKB, Leads-Caps, Sheet 1)

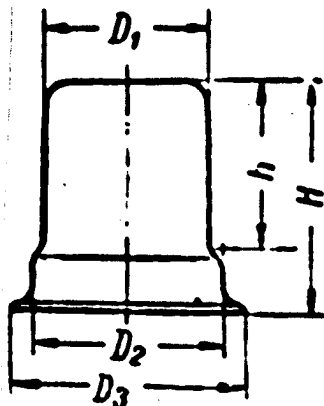


Fig. 2. Type VK2 lead-cap.

1	Условное обозначение типоразмера	D_1 мм	D_2 мм	D_3 мм	H мм	h мм
2	BK2-1	$6,5_{-0,2}$	$9,3_{-0,26}$	$11_{-0,43}$	$8_{-0,36}$	$6,5_{+0,36}$
3	BK2-2	$6,5_{-0,2}$	$7,5_{-0,36}$	$8,5_{-0,36}$	$7_{-0,36}$	$5_{+0,36}$
4	BK2-3	$6,5_{-0,2}$	$8,5_{-0,36}$	$9,5_{-0,36}$	$9_{-0,36}$	$7_{+0,36}$

1) Arbitrary designation for dimension type; 2) VK2-1; 3) VK2-2; 4) VK2-3.

Note. Lead caps types VK2-2 and VK2-3 are not specified for newly developed electron tubes.

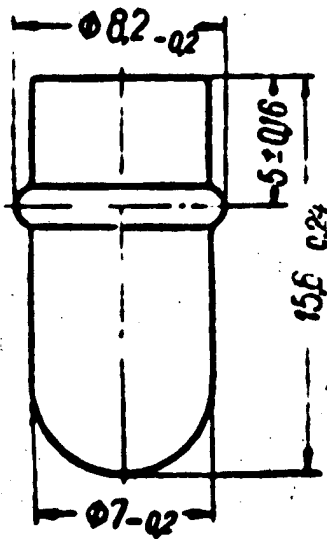


Fig. 3. Type VK3 lead-cap.

(Above material published April 1959, PKB, Leads-Caps, Sheet 1)

LIST OF GENERAL STANDARDS APPLYING TO ELECTRON-TUBE DEVICES

Name of GOST	Number	Took effect
Plastic cans and buttons for bases of electron-tube devices	GOST 345-54 (replaces GOST 345-51)	1 July 1955
Low-power electron tubes. Methods for electrical testing	GOST 1879-42	1 February 1943
Electronic amplifier, rectifier, and transmitting tubes with continuous plate dissipation greater than 20 watts for commonly employed devices. General technical specifications	GOST 1914-55 (replaces GOST V-1914-42)	1 April 1956
Electron tubes, cathode-ray tubes, and gas-discharge devices with solid indirectly heated cathodes. Series of filament and plate voltages	GOST 2182-54 (replaces GOST 2182-43)	1 October 1954
Mercury rectifiers. Classification and technical specifications	GOST 2329-43	1 December 1944
Low-power electron tubes. Methods of testing for useful service life	GOST 3839-47	1 January 1948
Electron vacuum-tube and crystal devices. Ion devices. System of designations	GOST 5461-56 (replaces GOST 5461-50)	1 July 1956
Rectifiers for X-ray equipment	GOST 6919-54 (replaces OST 40121)	1 July 1954
Transmitting and high-power amplifier electron tubes. Electrical-test methods	GOST 7046-54	1 January 1955
(Above material published April 1959, PKB, Standards, Sheet 1)		
Current stabilizers (baretters). General technical specifications	GOST 7161-54	1 July 1955
Current regulators (baretters). Basic constants and dimensions	GOST 7162-54 (replaces OST 40119)	1 July 1955
X-ray equipment. General technical specifications	GOST 7248-54	1 July 1955

Name of GOST	Number	Took effect
Hot-cathode thyratrons for commonly used devices. General technical specifications	GOST 7391-55	1 January 1956
Electronic amplifier, rectifier, and transmitting tubes with plate dissipations of up to 20 watts, for commonly used devices. General technical specifications	GOST 7428-55	1 October 1955
Formation of multiplicative and fractional units of measurement. Abbreviation of units of measurement	GOST 7663-55	1 January 1956
Electron-tube devices. Arrangement and connection dimensions of pins	GOST 7842-58	1 April 1959
Light units	GOST 7932-56 (replaces OST 4891)	1 July 1956
Low-power electron tubes. Test set-ups and general rules for electrical tests	GOST 8089-56	1 April 1957
Low-power electron tubes. Method of measuring filament current and voltage	GOST 8090-56 (replaces GOST 1879-42, section I)	1 April 1957
Low-power electron tubes. Methods of measuring plate current and grid current where the grid is positive with respect to the cathode	GOST 8091-56 (replaces GOST 1879-42, sections II and IV)	1 April 1957
Low-power electron tubes. Method of measuring grid current with grid negative relative to cathode	GOST 8092-56 (replaces GOST 1879-42, section III)	1 April 1957
(Above material published April 1959, PKB, Standards, Sheet 1)		
Low-power electron tubes. Method of measuring cathode current	GOST 8093-56 (replaces GOST 1879-42, section V)	1 April 1957
Low-power electron tubes. Method of measuring cathode electron-emission current	GOST 8094-56 (replaces GOST 1879-42, section VI)	1 April 1957
Low-power electron tubes. Test methods under rectifier conditions	GOST 8095-56 (replaces GOST 1879-42, sections VII, VIII, XXI, pages 286-288, XXVII and XXVIII)	1 April 1957

Name of GOST	Number	Took effect
Low-power electron tubes. Methods for measuring trans- conductance	GOST 8096-56 (re- places GOST 1879-42, section X)	1 April 1957
Low-power electron tubes. Methods for measuring amplifi- cation factor	GOST 8097-56 (re- places GOST 1879-42, section XI)	1 April 1957
Low-power electron tubes. Methods for measuring internal resistance	GOST 8098-56 (re- places GOST 1879-42, section XII)	1 April 1957
Low-power electron tubes. Methods for measuring output power and nonlinear distortion created by the tube, testing tubes under class A and class B conditions in audio amplifi- cation	GOST 8099-56 (re- places GOST 1879-42, sections XIII and XIV)	1 April 1957
Low-power electron tubes. Method for testing static in- terelectrode capacitances	GOST 8100-56 (re- places GOST 1879-42, section XVI)	1 April 1957
Low-power electron tubes. Method for testing cathode warm-up time	GOST 8101-56 (re- places GOST 1879-42, section XVII)	1 April 1957

(Above material published April 1959, PKB, Standards, Sheet 2)

Low-power electron tubes. Method for measuring insula- tion resistance between elec- trodes, as well as between electrodes and other tube elements	GOST 8102-56 (re- places GOST 1879-42, section XIX)	1 April 1957
Low-power electron tubes. Methods for measuring grid cutoff voltage and cutoff voltage for grid electron current	GOST 8103-56 (re- places GOST 1879-42, section XX)	1 April 1957
Low-power electron tubes. Test method for maximum per- missible plate dissipation	GOST 8104-56 (re- places GOST 1879-42, section XXI, pages 281- 285)	1 April 1957
Low-power electron tubes. Methods for measuring dynamic amplification factor and low- frequency gain response	GOST 8105-56 (re- places GOST 1879-42, section XXIII)	1 April 1957

Name of GOST	Number	Took effect
Low-power electron tubes. Test methods for short circuiting and open circuiting	GOST 8106-56 (replaces GOST 1879-42, section XXVI)	1 April 1957
Electronic X-ray tubes. General technical specifications	GOST 8490-57	1 January 1958

Electric-Lighting Bulbs

Electric incandescent bulbs for railway use	GOST 1181-54 (replaces GOST 1181-48)	1 July 1954
Electrical incandescent bulbs for local illumination	GOST 1182-54 (replaces GOST 1182-49)	1 July 1954
(Above material published April 1959, PKB, Standards, Sheet 2)		
Electric incandescent bulbs for ship-board use	GOST 1608-56 (replaces GOST 1608-47)	1 October 1956
Electric incandescent bulbs for automobiles and tractors	GOST 2023-50 (replaces GOST V-2023-43)	1 January 1951
Miniature electric incandescent bulbs	GOST 2204-52 (replaces GOST 2204-43)	1 January 1953
Electric incandescent bulbs for normal lighting	GOST 2239-54 (replaces GOST 2239-43)	1 July 1954
Electric incandescent bulbs for projection and sound-reproducing motion-picture equipment	GOST 4019-54 (replaces GOST 4019-48)	1 July 1954
Electric incandescent bulbs in cylindrical envelopes	GOST 5011-54 (replaces GOST 5011-49)	1 July 1954
Mercury fluorescent bulbs	GOST 6825-54	1 June 1954
Electric incandescent switch bulbs	GOST 6940-54 (replaces GOST 2204-43 in switch-bulb section)	1 July 1954
Starters for fluorescent tubes. Ballast chokes	GOST 7853-55	1 July 1956
Electric incandescent bulbs for general-purpose projectors	GOST 7874-56	1 July 1956

(Above material published April 1959, PKB, Standards, Sheet 3)

List of Standards for Various Types of Electron Tubes for Commonly Used Devices

Наименование типа прибора	Номер ГОСТ	Срок введения	Наименование типа прибора	Номер ГОСТ	Срок введения
4 Лампы электронные маломощные					
1A1P	7708-55	1/IV 1956 г.	6K3	8084-56	1/IV 1957 г.
1B1P	8006-56	1/X 1956 г.	6K4	8083-56	1/IV 1957 г.
1K1P	7707-55	1/IV 1956 г.	6K4P	8352-57	1/X 1957 г.
1C1P	8359-57	1/X 1957 г.	6K7	8363-57	1/X 1957 г.
2P1P	8005-56	1/X 1956 г.	6N1P	8355-57	1/X 1957 г.
2C1P	8527-57	1/I 1958 г.	6N2P	8356-57	1/X 1957 г.
5C3S	8360-57	1/X 1957 г.	6N3P	8357-57	1/X 1957 г.
5C4S	8079-56	1/IV 1957 г.	6N7S	8374-57	1/X 1957 г.
5C8S	8361-57	1/X 1957 г.	6N13S	8378-57	1/X 1957 г.
5C9S	8362-57	1/X 1957 г.	6P1P	8358-57	1/X 1957 г.
6A2P	8354-57	1/X 1957 г.	6P3S	8376-57	1/X 1957 г.
6A7	8086-56	1/IV 1957 г.	6P6S	8375-57	1/X 1957 г.
6A8	8367-57	1/X 1957 г.	6P9	8377-57	1/X 1957 г.
6A10S	8087-56	1/IV 1957 г.	6S2P	8353-57	1/X 1957 г.
6B8S	8369-57	1/X 1957 г.	6S2S	8081-56	1/IV 1957 г.
6G2	8370-57	1/X 1957 г.	6S4S	8373-57	1/X 1957 г.
6G7	8371-57	1/X 1957 г.	6S5S	8368-57	1/X 1957 г.
6E5C	8379-57	1/X 1957 г.	6F5M	8372-57	1/X 1957 г.
6Z1P	8349-57	1/X 1957 г.	6F6S	8082-56	1/IV 1957 г.
6K3	8085-56	1/IV 1957 г.	6K12P	8348-57	1/X 1957 г.
6K3P	8350-57	1/X 1957 г.	6K16S	8080-56	1/IV 1957 г.
6K4	8364-57	1/X 1957 г.	6S4P	8347-57	1/X 1957 г.
6K5P	8351-57	1/X 1957 г.	6L4P	8528-57	1/I 1958 г.
6K7	8365-57	1/X 1957 г.	6L5C	8078-56	1/IV 1957 г.
6K8	8366-57	1/X 1957 г.	30L6C		

1) Type of device; 2) GOST number; 3) Date effective; 4) Low-power electron tubes.

(Above material published April 1959, PKB, Standards, Sheet 3)

1 Наименование типа прибора	2 Номер ГОСТ	3 Срок введения	1 Наименование типа прибора	2 Номер ГОСТ	3 Срок введения
5 Трубки электроннолучевые и электронные рентгеновские					
<i>35LK2B</i> 35LK2B	8815-58	с 1/I 1959 г.	<i>3BDM2-100</i> 3BDM2-100	8602-57	I VII 1958 г.
<i>43LK2B</i> 43LK2B	8814-58	до 1/I 1962 г.	<i>3BTM1-200</i> 3BTM1-200	8603-57	I VII 1958 г.
<i>1BPIV1-60</i> 1BPIV1-60	8492-57	до 1/I 1962 г.	<i>10BD1-110</i> 10BD1-110	8605-57	I VII 1958 г.
<i>2-5BDM3-100</i> 2-5BDM3-100	8604-57	I/I 1958 г.	<i>BSV2</i> BSV2	8600-57	I VII 1958 г.
<i>2BDM4-75</i> 2BDM4-75	8601-57	I VII 1958 г.	<i>BSV3</i> BSV3	8491-57	I I 1958 г.
6 Лампы электронные генераторные					
<i>G-807</i> Г-807	8380-57	I/X 1957 г.	<i>GK-3000</i> ГК-3000	7710-55	I IV 1956 г.
<i>GK-750</i> ГК-750	7709-55	I/IV 1956 г.	<i>GU-150</i> ГУ-150	7712-55	I IV 1956 г.
<i>GU-8</i> ГУ-8	7711-55	I/IV 1956 г.			
7 Тиратроны					
<i>TG...</i> ТГ-0.1/1.3	7843-55	I/VII 1956 г.	<i>TR...</i> ТР-5/2	7954-56	I I 1957 г.
ТГ-2.5/4	7952-56	I/I 1957 г.	ТР-6/15	7955-56	I/I 1957 г.
ТГ-5/3	7953-56	I/I 1957 г.	ТР-40/15	7956-56	I I 1957 г.

1) Type of device; 2) GOST number; 3) Date effective; 5) Cathode-ray tubes and electronic X-ray tubes; 6) Electronic transmitting tubes; 7) Thyratrons.

(Above material published April 1959, PKB, Standards, Sheet 4)

CLASSIFICATION OF RECEIVING TUBES DEALT WITH IN HANDBOOK

By Types of Tubes and Filament Voltages

1) Filament voltage, volts; 2) diodes and dual diodes; 3) diode-triode; 4) diode-pentode; 5) triode; 6) twin triodes; 7) triode-pentodes, triode-hexodes, and triode-heptodes; 8) pentodes; 9) sharp cutoff; 10) remote cutoff; 11) heptodes; 12) power amplifiers; 13) triodes and tetrodes; 14) twin triodes; 15) pentodes and beam-power tetrodes; 16) tuning indicators; 17) rectifier tubes.

1 Напря- жение накала е	2 Диаоды и двойные диаоды	3 Диаод- триоды	4 Диаод- пенто- ды	5 Триоды	6 Двойные триоды	Триоды, пентоды, триоды- гексоды и триоды- гептоды
0,6	—	—	—	—	—	—
0,7	—	—	—	—	—	—
1,2	— — — —	— <i>1B1P</i> <i>1B2P</i> —	— <i>1B1П</i> <i>1B2П</i> —	— <i>1C12П</i> <i>1S12P</i> —	— — — —	— <i>1I2P</i> <i>1H2П</i> — —
1,25	— <i>2D3B</i> —	— — —	— — —	— — —	— — —	— — —
2	<i>2D3B</i> — —	— — —	— — —	<i>2S14B</i> <i>2C14B</i> —	— — —	— — —
22	— <i>2X1Л</i> —	<i>2K11L</i> — —	— — —	— — —	— — —	— — —

8 Пентоды		11 Гепто- ды	12 УСИЛИТЕЛИ МОЩНОСТИ			16 Индикаторы настройки	17 Кенотроны
9 с корот- кой ха- ракте- ристикой	10 с удлин- енной ха- ракте- ристикой		13 триоды и тетроды	14 двойные триоды	15 пентоды и лучевые тетроды		
6Ж6Б 06П2Б	06Zh6B 06P2B	-	-	-	-	-	-
-	1Zh17B	-	-	-	-	1T51S	1Ц1С
1Ж17Б 1Ж18Б	1Zh18B	-	-	-	-	-	-
1К1Р 1К2Р	1К1П 1К2П	1А1П 1А2П	1A1P 1A2P	2P1P 2P2P	2П1П 2П2П	-	1T541P 1Ц1П
-	-	-	-	1H3C	-	-	1Ц7С
-	2Zh2M	-	1N3S	-	1П2Б 1П3Б 1П4Б	1P2B 1P3B 1P4B	1T37S
2Ж2М	2K2M	-	-	-	2П9М	2P9M	-
2Ж14Б 2Ж15Б	2Zh14B 2Zh15B	-	-	2P19B	2П19Б	-	-
2Ж27Л	2Zh27L	-	-	-	2П29Л	2P29L	-
2Ж27П	2Zh27P	-	-	-	2П29П	2P29P	-

(Above material published April 1959, PKB, Receiving Tubes, Classification, Sheet 1)

[illegible]

(Above material published April 1959, PKB, Receiving Tubes, Classification, Sheet 2)

1 Напря- жение накала, в	2 Двоты и двойные двоты	3 Двот- триоты	4 Двот- пенто- ды	5 Триоты	6 Двойные триоты	7 Триот- пентоты, триот- гексоды и триот- гексоды	8 Пентоты с корот- кой ха- рактери- стикой	9 Пентоты с удли- ненной ха- рактери- стикой	10 Гекто- ты	11 Усилители мощности триоты и тетроты	12 Двойные триоты	13 Пентоты и лучевые тетроты	14 Индикаторы настрой- ки	15 Кен- троны
6.3	6G1 6G2 6G7 — — — — — —	6Г1 6Г2 6Г7 — — — — — —	6Б8 — — — — — — — —	— — — — — — — — —	— — — — — — — — —	6Zh3 6Zh4 6Zh4-ye 6Zh7 6Zh8 6Zh8-ye	6Ж3 6Ж4 6Ж4-E 6Ж7 6Ж8 6Ж8-E 1511 1514	6K3 6K4 6K7 — — — — — —	6A7 6A7 6R4 6K7 — — — — — —	— — — — — — — — — —	— — — — — — — — — —	6П9 6П9-E 1512 — — — — — — —	6P9 6P9-ye — — — — — — — —	— — — — — — — — — —
	6D3D 6D3L 6D10D 6D10D — — — —	— — — — — — — —	— — — — — — — —	6C5D 6C9D 6C11D 6C13D 6C16D 1504	6S5D 6S9D 6S11D 6S13D 6S16D 1504	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —
	— — — — — — — —	— — — — — — — —	— — — — — — — —	6C17K	6S17K	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —
7	— — — — — — — —	— — — — — — — —	— — — — — — — —	— — — — — — — —	— — — — — — — —	— — — — — — — —	7Ж12S 7Ж12C	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	7П12S 7П12C	— — — — — — — — — —	— — — — — — — — — —

(Above material published April 1959, PKB, Receiving Tubes, Classification, Sheet 2)

[illegible]

(Above material published April 1959, PKB, Receiving Tubes, Classification, Sheet 3)

1 Напря- жение накала, В	2 Диаод и двойные диооды	3 Диаод- триоды	4 Диаод- пентоды	5 Триоды	6 Двойные триоды	7 Триод- пентоды, триод- гексооды и триод- гептооды	8 Пентоды		11 Гепто- оды	12 Усилители мощности			16 Индикаторы настрой- ки	17 Кенотроны
							9 с корот- кой ха- ракте- ристикой	10 с удли- ненной характе- ристикой		13 триоды и тетроды	14 двойные триоды	15 пентоды и лучевые тетроды		
10	—	—	—	—	—	—	10Zh1L 10Ж1Л 10Ж3Л 10Zh3L	—	—	—	—	—	—	—
	—	—	—	—	—	—	10Ж12С 10Zh12S	—	—	—	—	10P12S 10H12C	—	—
12,6	—	—	—	—	—	—	12Ж1Л 12Ж3Л	12Zh1L 12Zh3L	—	—	—	12H17J 12P17L	—	—
	12Kh3S 12X3C	—	—	12S3S 12C3C	12N10S 12H10C 12H11C 12N11S	—	—	—	—	—	—	—	—	—
	—	12Г1 12Г2	12G1 12G2	—	—	—	12Zh8 12Ж8	12K3 12K3 12K4 12K4	—	—	—	—	—	—
30	—	—	—	—	—	—	—	—	—	—	—	30P15 30H11C	—	30T66S 30H6C

By Preferred Application

Preferred application

Tube Type

RF voltage amplification

1Zh17B, 1Zh18B, 1K1P, 1K2P, 1S12P,
2Zh2M, 2Zh14B, 2Zh15B, 2Zh27L,
2Zh27P, 2K2M, 2S14B, 4Zh1L, 6V1P,
6B8, 6Zh1B, 6Zh1B-V, 6Zh4P, 6Zh5B,
6Zh5B-V, 6Zh1Zh, 6Zh3, 6Zh7, 6Zh8,
6Zh8-Ye, 6K1Zh, 6K1B, 6K1P, 6K3,
6K4, 6K4P, 6K4P-V, 6K7, 6N3P,
6N3P-I, 6N5P, 6N14P, 6S1Zh, 6S1P,
6S3P, 6S4P, 7Zh12S, 10Zh1L, 10Zh3L,
10Zh12S, 12Zh1L, 12Zh3L, 12Zh8,
12K3, 12K4, 1514

RF wide-band voltage amplification

6Zh1P, 6Zh1P-V, 6Zh1P-Ye, 6Zh2P,
6Zh2P-V, 6Zh2P-Ye, 6Zh3P, 6Zh4,
6Zh4-Ye, 6Zh5P, 6Zh9P, 6Zh9P-Ye,
6Zh10P, 6E5P, 6E5P-Ye, 6Zh11P,
6Zh21P, 6Zh22P, 6Zh23P, 1511, 1538

Frequency conversion

1A1P, 1A2P, 1I2P, 1S12P, 6A2P,
6A3P, 6A7, 6A10S, 6Zh2B, 6Zh2B-V,
6Zh2P, 6Zh2P-V, 6Zh2P-Ye, 6Zh10B,
6Zh10B-V, 6I1P, 6F1P.

RF oscillator

2P9M, 2P19B, 2P29L, 2P29P, 4Zh1L,
4P1L, 6S1Zh, 6S6B, 6S6B-V, 6S8S,
6N3P, 6N3P-I, 6N14P, 6P13S,
10Zh1L, 10Zh3L, 12Zh1L, 12Zh3L,
12P17L

Microwave oscillator

4S3S, 6S2P, 6S5D, 6S11D, 6S13D,
6S16D, 12S3S, 1504

Audio voltage amplification and detection

06Zh6B, 06P2B, 1B1P, 1B2P, 2S14B,
2Kh1L, 6B8, 6G1, 6G2, 6G3P, 6G7,
6D4Zh, 6D6A, 6D6A-V, 6N1P, 6N1P-V,
6N1P-I, 6N1P-Ye, 6N2P, 6N2P-V,
6N2P-Ye, 6N4P, 6N8S, 6N9S, 6N10S,
6N12S, 6N15P, 6N16B, 6N17B, 6S2S,
6S3B, 6S5S, 6S6B, 6S6B-V, 6S7B,
6S7B-V, 6Kh2P, 6Kh2P-V, 6Kh2P-Ye,
6Kh2P-I, 6Kh6S, 6Kh7B, 12G1, 12G2,
12N4P, 12N10S, 12N11S, 1539

Microwave detection

6D3D, 6D4Zh, 6D6A, 6D6A-V, 6D10D,
12Kh3S

Preferred application

Tube Type

Audio power amplification

1N3S, 1P2B, 1P3B, 1P4B, 2P1P,
2P2P, 2S4S, 6N4P, 6N6P, 6N6P-I,
6N7S, 6P1P, 6P1P-V, 6P1P-Ye, 6P3S,
6P3S-Ye, 6P6S, 6P14P, 6P15P,
6P18P, 6S4S, 7P12S, 10P12S, 30P1S,
1515, 1540

RF power amplification

2P9M, 2P19B, 2P29L, 2P29P, 1Zh1L,
4P1L, 10Zh1L, 10Zh3L, 12Zh1L,
12Zh3L, 12P17L

Microwave voltage amplifi-
cation

6S17K

Oscillation and amplifi-
cation in television-device
sweep systems

6N5S, 6N13S, 6P7S, 6P13S, 6F1P

Wide-band RF power amplifi-
cation

6P9, 6P9-Ye, 6P15P, 6S9L, 6E6P,
1512

AC rectification

1Ts1S, 1Ts7S, 1Ts11P, 2Ts2S, 5Ts3S,
5Ts4M, 5Ts4S, 5Ts8S, 5Ts9S, 5Ts9S-Ye,
5Ts12P, 6Kh2P, 6Kh2P-V, 6Kh2P-I,
6Ts4P, 6Ts4P-V, 6TS4P-Ye, 6Ts5S,
6Ts10P, 6Ts13P, 30Ts6S, 1502, 1536,
1550

Tuning indicator

6Ye1P, 6Ye5S

(Above material published April 1959, PKB, Receiving Tubes, Classi-
fication, Sheet 4)

INSTRUCTIONS FOR THE UTILIZATION OF RECEIVING-AMPLIFYING TUBES

As a rule, modern receiving-amplifier tubes have an oxide-coated cathode, consisting of a metal core (base) with an active coating of alkali-earth metals. An oxide-coated cathode is an important element of a tube and basically determines operating stability and tube service life.

Cathodes for receiving tubes are divided into two groups: directly heated cathodes and indirectly heated cathodes.

In the directly heated cathode, the heating current flows directly through the metal core upon which the oxide layer is applied.

In an indirectly heated cathode, the metal base of the cathode, which carries the oxide layer, is heated with the aid of a heater that is electrically insulated from it.

A directly-heated cathode is more efficient than the indirect type, has less thermal lag (warms up faster).

The advantage to receiving tubes using indirectly heated cathodes lies in their greater mechanical strength and the possibility of using AC for heating.

The following rules must be observed in operating receiving tubes:

1. The best results are produced when tubes are operated at rated cathode-heating voltages.

Cathode-heating voltages exceeding the rated value (overheating) lead to increased cathode temperature, to an increased rate of volatilization of the activated cathode material, and to precipitation of the latter upon other electrodes. This, in turn, leads to a drop in cathode electron emission, to a drop in transconductance and plate

current. In addition, the deposition of active materials upon grids and plate of a tube facilitates an increase in the thermionic current from these electrodes, and also leads to a shift in the tube characteristic curve in connection with a change in the contact potentials between cathode and other tube electrodes.

A decrease in the heating voltage for an oxide-coated cathode with respect to the rated value (underheating) leads to a drop in cathode temperature and to the predominance of processes deactivating the cathode over processes tending to activate it, as a result of which a rapid drop in electron emission occurs.

2. If the maximum permissible values for the power dissipated by tube electrodes is exceeded, a sharp rise in gas evolution at the electrodes may occur, and the oxide-coated cathode may be damaged by the evolving gases.

3. It is not recommended that series heater connections be utilized for tubes (with the exception of cases in which the tubes are specially designed for this purpose), since with a series connection, one group of tubes may have overheated cathodes, and the other underheated cathodes. The permissible intermittent fluctuation in filament voltage is $\pm 10\%$ unless otherwise specified in the handbook sheets.

4. When operating tubes with directly heated cathodes, depending upon the tube filament voltage, the filament battery must be so connected that the voltage only slightly exceeds the rated filament voltage.

5. In operating tubes with indirectly heated cathodes, it is necessary to endeavor to see that the voltage between the cathode and heater does not exceed the value permissible for the given type of tube, as shown in the handbook sheet. If this voltage is exceeded, the insulating coating on the heater may break down, and the tube will be

damaged.

It is desirable that this voltage be as small as possible, and in this case it is necessary to take into account the fact that the extended application of a positive voltage (with respect to the cathode) is very dangerous. In order to prevent the appearance of large voltages between cathode and heater, we recommend that a separate transformer winding be provided for the heater supply. In order to exclude the effect of instability of insulation leakage current from the heater, we recommend that the cathode-heater section be shunted by a resistor on the order of several tens of kilohms, if this does not impair circuit operation.

In order to decrease hum occurring when AC is supplied to the heater, we recommend that a voltage on the order of ± 25 v be applied between cathode and heater with one polarity or the other, whichever produces the greatest effect.

6. Of very great importance in tube operation is the proper choice of resistances in the control-grid circuit. The resistance in the control-grid circuit, where it is connected to the cathode circuit of the tube, and not to the "plus" side of the power source, should be minimum, especially for tubes with high transconductances. In tubes having a high resistance connected into the grid circuit (1-2 megohms), the appearance of a slight back current leads to a sharp rise in plate current, and consequently, in the power dissipated at the plate. In many cases, this process increases in avalanche fashion, and causes the tube to fail.

(Above material published April 1959, PKB, Receiving-Tube Applications, Sheet 1)

In accordance with these considerations, the value of the resistance in the control-grid circuit should not exceed the values given in

the handbook for the corresponding tube types.

Stabilization of DC tube operation increases interchangeability (decreases the dependence of equipment operation upon individual tube peculiarities). The simplest method for stabilization is to connect a pure resistance into the tube cathode circuit, as well as a dropping resistor into the screen-grid circuit.

In this connection, we recommend that a self-biasing circuit be used, rather than fixed bias. For tubes having large transconductance (more than 10 ma/v), we recommend that a higher resistance be connected into the cathode circuit than is necessary for the normal value of bias; in this case, in order to provide the grid bias required by the tube, a positive voltage of the necessary value should be applied to the grid.

7. In order to determine the reserve reliability for equipment operation, we recommend that a periodic check be carried out, to test the operating ability with a brief cathode underheating, on the order of 5.5 v for 6.3-v tubes.

If in this case, the operating ability of the equipment is not destroyed, the tubes may be left in the equipment, unchanged. Where the equipment loses its operating ability, the trouble is found by the standard procedure. Faulty tubes are replaced. This measure makes it possible to utilize tubes in equipment for a period of time exceeding their normal service life.

8. Receiving-amplifying tubes, as a rule, are resistant to the effect of decreased ambient temperatures (to -60°C), elevated ambient temperatures (to $+70^{\circ}\text{C}$) and to increased relative humidity of the surrounding air (to 98% at 20°C), unless otherwise noted in the handbook sheets.

9. Stability of tube operation at elevated ambient-air tempera-

tures is determined by the envelope temperature at its hottest section. Envelope overheating in a tube causes increased liberation of gases from the envelope walls, disturbing the operation of the getter, and in many cases facilitates the development of a process of electrolysis in the glass of the tube stem, and leads to early failure of the tube.

Envelope temperature conditions depend upon the conditions for radiation, heat conductance, and convection, and the given dimensions and properties of surface elements surrounding the tube. Thus, in designing equipment, we recommend:

a) in utilizing shields, good conditions should be provided for carrying heat off from the tube envelope as a result of air convection, and shields should also be utilized that have surfaces that reflect as little as possible (black shields);

b) tube cooling conditions should be taken into account in choosing the arrangement of equipment elements;

c) the tube temperature regime should be checked.

(Above material published April 1959, PKB, Application of Receiving Tubes, Sheet 2)

The maximum permissible envelope temperature is not the same for different tube types. On the average, for output tubes under service conditions, it should not exceed 150-170°C.

10. All receiving-amplifying tubes may operate for short periods of times under conditions of vibration at frequencies of from 20 to 70 cps, and accelerations of up to 2.5 g, with the exception of increased-reliability tubes with ruggedized structures, which may operate at greater acceleration values; it is necessary, however, to take measures to cushion the tubes against shock as much as possible.

When tubes are operated under vibration and shock-acceleration conditions, exceeding permissible values, additional shock-protection

is necessary.

11. When utilizing miniature (button-type) and other baseless tubes with rigid leads (pins), in order to eliminate danger of failure of the glass stem, it is necessary to observe the following conditions:

- a) use tube sockets recommended by the State Committee of the Council of Ministers of the USSR on Radioelectronics;
- b) in assembling equipment, take measures to prevent disturbance of normal arrangement of floating contacts of socket springs. In this case, we recommend that sockets be wired in jigs;
- c) avoid the utilization of free tube-socket lugs as supporting elements for wiring, as this may later hamper the conversion of equipment to modern tubes, for which it is necessary to utilize all of the socket springs;
- d) insert and pull tubes in a position perpendicular to the plane of the socket.

Instructions for the Operation of Subminiature Tubes

1. It is not permissible to bend leads at the glass. Leads may be bent, soldered, or clamped under a screw at a distance of not less than 5 mm from the glass of the stem, in order to avoid the appearance of cracks and scratches.

2. Scratches and small cracks at the leads, that do not cause leakage after a period of 7-14 days after formation are permissible.

A sign of the absence of leakage is the presence of a getter deposit on the envelope dome, or a back grid-current value lying within normal limits.

3. In order to avoid bending and stretching of leads, tubes should be clamped by the envelope with the aid of rubber supports.

It is permissible to mount tubes in thin metal spring holders, which may serve simultaneously as a capacitive shield and heat radiator.

Where shields are used, they should be made of materials with high heat conductivity, and should also provide for thermal contact of the shield with the surface of the tube envelope and the metal chassis. (Above material published April 1959, PKB, Application of Receiving Tubes, Sheet 2)

The inside and outside surfaces of shields should be black. Shields may have holes for improving tube cooling.

4. The temperature of the envelope glass during operation should be as low as possible. It is necessary to take measures to cool the tube as much as possible. Measurement of envelope temperature should be carried out with the aid of thermocouples of not more than 0.1 mm in diameter. In measuring ambient air temperature with a thermometer, it should be located as close as possible to the tube.

5. Where tubes are utilized under more severe operating conditions, or at decreased atmospheric pressure, we recommend that the tube be immersed in a cooling liquid, possessing good dielectric properties.

6. We recommend that the heater voltage be turned on 40-30 sec prior to turning on of the remaining voltages.

After an extended period of nonoperation or an interruption in operation, it is recommended that the tube first be warmed up under operating conditions for no less than 30 min.

Filament voltage should not be turned on and off unnecessarily frequently.

After extended operation with a certain amount of overheating, especial care should be taken to guard against underheating. A decrease in the voltage on the plate and screen (second) grids will increase tube reliability.

7. In RF operation, it is necessary to solder the leads no more

than 8-10 mm from the glass, cutting off superfluous ends.

8. Contamination of the glass between leads causes a drop in insulation resistance. The glass should be washed with pure water or alcohol with the aid of a brush.

It is not permissible to age tubes on factory-made equipment.

Measurement of electrical and other constants or other tests must be carried out in strict accordance with effective general and specific technical specifications or state standards. It is permissible to check tube serviceability on special test units produced commercially. The results of such a check, however, cannot serve as a basis for rejecting tubes.

(Above material published April 1959, PKB, Applications of Receiving Tubes, Sheet 3)

LIST OF NUMBERS OF DIMENSION DRAWINGS FOR RECEIVING TUBES
AND LOW-POWER RECTIFIERS PUBLISHED IN THE HANDBOOK

1. In Numerical and Alphabetical Order of Type Designation
1) Tube type; 2) Drawing No.

Тип лампы 1	Номер 2 чертежа	Тип лампы 1	Номер 2 чертежа	Тип лампы 1	Номер 2 чертежа
06Zh6B		2Zh27P	11P	6A7	1M
06Ж6Б	1Б 1Б	2Ж27П	11П	6A10S	1M 12S
06P2B		2K2M	22S	6A10C	12C
06П2Б	1Б 1Б	2К2М	22С	6B8	4M 4M
1A1P	5П 5П	2P1P	5P	6B1P	18П
1A1П	5П 5П	2П1П	5П	6Г1	1M 1M
1A2P	5П 5П	2P2P	5P	6Г2	1M 1M
1A2П	5П 5П	2П2П	5П	6Г3П	15П
1B1P	5П 5П	2P9M	10S	6Г7	3M 3M
1B1П	5П 5П	2П9М	10С	6Д3Д	4Д 4Д
1B2P	5П 5П	2P19B	10B	6Д4Ж	1Ж 1Ж
1B2П	5П 5П	2П19Б	10Б	6Д6A	3Б 3Б
1Zh17B	11Б 11Б	2P29L	3L	6Д6A-B	3Б 3Б
1Ж17Б	11Б 11Б	2П29Л	3Л	6Д10Д	1Д 1Д
1Zh18B	11Б 11Б	2P29P	11P	6E1P	17П
1Ж18Б	11Б 11Б	2П29П	11П	6E5C	4C 4C
1T2P	15П 15П	2S14B	8B	6Ж1Б	5Б 5Б
1H2П	15П 15П	2C14B	8Б	6Ж1Б-V	5Б 5Б
1K1P	5П 5П	2Kh1L	3L	6Zh12h	2Ж 2Ж
1K1П	5П 5П	2Х1Л	3Л	6Ж1П	2П 2П
1K2P	5П 5П	2T2S	18S	6Ж1П-B	2П 2П
1K2П	5П 5П	2Т2С	18С	6Ж1П-E	2П 2П
1N3S	8C 8C	4Zh1L	4L	6Ж2B	5Б 5Б
1H3C	8C 8C	4Ж1Л	4Л	6Ж2B-V	5Б 5Б
1P2B	2Б 2Б	4P1L	2L	6Ж2Б	
1P2Б	2Б 2Б	4П1Л	2Л		
1P3B	2Б 2Б	4S3S	27S		
1P3Б	2Б 2Б	4С3С	27С		
1P4B	2Б 2Б	5Ts3S	1C 15		
1P4Б	2Б 2Б	5Т3С	1С 15		
1S12P	5П 5П	5T4M	24S		
1C12П	5П 5П	5Т4М	24С		
1Ts1S	21C 21S	5T4S	2C 2S		
1Ц1С	21С 21С	5Т4С	2С 2С		
1Ts7S	20C 20S	5T8S	31C		
1Ц7С	20С 20С	5Т8С	31С		
1Ts11P	10П 10П	5T9S	29C		
1Ц11П	10П 10П	5Т9С	29С		
2Zh2M	22C 22S	5T9S-1/2	29C		
2Ж2М	22С 22С	5Т9С-1/2	29С		
2Zh14B	10Б 10Б	5T12P	18П		
2Ж14Б	10Б 10Б	5Т12П	18П		
2Zh15B	10Б 10Б	6A2P	3П		
2Ж15Б	10Б 10Б	6А2П	3П		
2Zh27L	3Л 3Л	6A3P	9П		
2Ж27Л	3Л 3Л	6А3П	9П		

(Above material published April 1959, PKB, Dimension-Drawing Numbers, Sheet 1)

1) Tube type; 2) Drawing No.

Тип лампы 1	Номер 2 чертежа	Тип лампы 1	Номер 2 чертежа	Тип лампы 1	Номер 2 чертежа
6ZH2P	2P	6N2P-V	13P	6S2P	6P
6Ж2П	2П	6Н2П-В	13П	6С2П	6П
6ZH2P-V	2P	6N2P-ye	15P	6S2S	13S
6Ж2П-В	2П	6Н2П-Е	15П	6С2С	13С
6ZH2P-ye	3P	6N3P	13P	6S3B	6B
6Ж2П-Е	3П	6Н3П	13П	6С3Б	6Б
6ZH3P	4P	6N3P-I	15P	6S3P	15P
6Ж3П	4П	6Н3П-И	15П	6С3П	15П
6ZH4	2M	6N4P	14P	6S4P	15P
6Ж4	2М	6Н4П	14П	6С4П	15П
6ZH3	1M	6N5P	13P	6S4S	1S
6Ж3	1М	6Н5П	13П	6С4С	1С
6ZH4-ye	2M	6N5S	1S	6S5D	6D
6Ж4-Е	2М	6Н5С	1С	6С5Д	6Д
6ZH4P	8P	6N6P	17P	6S5S	6S
6Ж4П	8П	6Н6П	17П	6С5С	6С
6ZH5B	7B	6N6P-I	17P	6S6B	4B
6Ж5Б	7Б	6Н6П-И	17П	6С6Б	4Б
6ZH5P	3P	6N7B	7S	6S6B-V	4B
6Ж5П	3П	6Н7С	7С	6С6Б-В	4Б
6ZH7	4M	6N8S	12S	6S7B	4B
6Ж7	4М	6Н8С	12С	6С7Б	4Б
6ZH8	2M	6N9S	12S	6S7B-V	4B
6Ж8	2М	6Н9С	12С	6С7Б-В	4Б
6ZH8-ye	2M	6N10S	14S	6S8S	23S
6Ж8-Е	2М	6Н10С	14С	6С8С	23С
6ZH9P	12P	6N12S	26S	6S9D	6D
6Ж9П	12П	6Н12С	26С	6С9Д	6Д
6ZH9P-ye	12P	6N13S	1S	6S11D	3D
6Ж9П-Е	12П	6Н13С	1С	6С11Д	3Д
6ZH10B	7B	6N14P	15P	6S13D	4D
6Ж10Б	7Б	6Н14П	15П	6С13Д	4Д
6ZH10P	12P	6N15P	4P	6S16D	2D
6Ж10П	12П	6Н15П	4П	6С16Д	2Д
6ZH11P	15P	6N16B	9B	6S17K	1K
6Ж11П	15П	6Н16Б	9Б	6С17К	1К
6ZH21P	15P	6N17B	9B	6S18S	30S
6Ж21П	15П	6Н17Б	9Б	6С18С	30С
6ZH22P	16P	GP1P	17P	6S19P	15P
6Ж22П	16П	6П1П	17П	6С19П	15П
6ZH23P	15P	GP1P-V	17P	GF1P	15P
6Ж23П	15П	6П1П-В	17П	6Ф1П	15П
GT1P	19P	GP1P-ye	17P	6KH2P	2P
6Н1П	19П	6П1П-Е	17П	6КН2П	2П
6K1Zh	2Zh	GP3S	3S	6KH2P-V	2P
6К1Ж	2Ж	6П3С	3С	6КН2П-В	2П
6K1P	1P	GP3S-ye	25S	6KH2P-ye	2P
К1П	1П	6П3С-Е	25С	6КН2П-Е	2П
6K3	1M	GP6S	5S	6KH2P-I	5P
6К3	1М	6П6С	5С	6КН2П-И	5П
6K4	1M	GP7S	15S	6KH6S	12S
6К4	1М	6П7С	15С	6КН6С	12С
6K4P	7P	GP9	5M	6KH7B	9B
6К4П	7П	6П9	5М	6КН7Б	9Б
6K4P-V	7P	GP9-ye	5M	GT54P	7P
6К4П-В	7П	6П9-Е	5М	6Т54П	7П
6K4P-ye	7P	GP13S	19S	GT54P-V	7P
6К4П-Е	7П	6П13С	19С	6Т54П-В	7П
6KT	4M	GP14P	19P	GT54P-ye	7P
6К7	4М	6П14П	19П	6Т54П-Е	7П
6N1P	13P	GP15P	19P	GT55S	9S
6Н1П	13П	6П15П	19П	6Т55С	9С
6N1P-V	13P	GP18P	19P	GT510P	20P
6Н1П-В	13П	6П18П	19П	6Т510П	20П
6N1P-ye	15P	6S1Zh	1Zh	GT313P	20P
6Н1П-Е	15П	6С1Ж	1Ж	6Т313П	20П
6N2P	13P	GS1P	1P	GE5P	18P
6Н2П	13П	6С1П	1П	6Е5П	18П

(Above material published April 1959, PKB, Dimension-Drawing Numbers.
Sheet 1)

1) Tube type; 2) Drawing No.

Тип лампы 1	2 Номер чертежа	Тип лампы	Номер чертежа 2	1 Тип лампы	2 Номер чертежа
6E5P-1/2	18P	12Zh3L	4L	30Ts6S	2S
635П-Е	18П	12Ж3Л	4Л	30Ц6С	2С
7Ж12С 7Zh12S	17C	12Ж8 12Zh8	2M 2M	1502	29S 29C
7П12С 7P12S	16C	12К3 12K3	1M 1M	1504	6D 6Д
10Ж1Л 10Zh1L	4L	12К4 12K4	1M 1M	1511	2M 2M
10Ж3Л 10Zh3L	4L	12Н10С 12N10S	14C 14S	1512	5M 5M
10Ж12С 10Zh12S	17C	12Н11С 12N11S	14C 14S	1514	2M 2M
10П12С 10P12S	16C	12П17Л 12P17L	1Л 1Л	1515	5S 5C
12Г1 12G1	1M	12С3С 12S3S	27C 27S	1538	4P 4П
12Г2 12G2	1M	12Х3С 12Kh3S	28C 28S	1539	13P 13П
12Ж1Л 12Zh1L	4L	30П1С 30P1S	11C 11S	1540	25S 25C
				1550	7P 7П

II. Arranged by Construction

a) In glass envelope

1) Tube type; 2) Drawing No.

Тип лампы 1	2 Номер чертежа	Тип лампы	2 Номер чертежа
1H3C 1N3S	8C 8S	6П3С-Е 6P3S-1/2	25C 25S
1Ц1С 1Ts1S	21C 21S	6П6С 6P6S	5C 5S
1Ц7С 1Ts7S	20C 20S	6П7С 6P7S	15C 15S
2Ж2М 2Zh2M	22C 22S	6П13С 6P13S	19C 19S
2К2М 2K2M	22C 22S	6С2С 6S2S	13C 13S
2П9М 2P9M	10C 10S	6С4С 6S4S	1C 1S
2Ц2С 2Ts2S	18C 18S	6С5С 6S5S	6C 6S
4С3С 4S3S	27C 27S	6С8С 6S8S	23C 23S
5Ц3С 5Ts3S	1C 1S	6С18С 6S18S	30C 30S
5Ц4М 5Ts4M	24C 24S	6Х6С 6Kh6S	12C 12S
5Ц4С 5Ts4S	2C 2S	6Ц5С 6Ts5S	9C 9S
5Ц8С 5Ts8S	31C 31S	7Ж12С 7Zh12S	17C 17S
5Ц9С 5Ts9S	29C 29S	7П12С 7P12S	16C 16S
5Ц9С-Е 5Ts9S-1/2	29C 29S	10Ж12С 10Zh12S	17C 17S
6А10С 6A10S	12C 12S	10П12С 10P12S	16C 16S
6Е5С 6Ye5S	4C 4S	12Н10С 12N10S	14C 14S
6Н5С 6N5S	1C 1S	12Н11С 12N11S	14C 14S
6Н7С 6N7S	7C 7S	12С3С 12S3S	27C 27S
6Н8С 6N8S	12C 12S	12Х3С 12Kh3S	28C 28S
6Н9С 6N9S	12C 12S	30П1С 30P1S	11C 11S
6Н10С 6N10S	14C 14S	30Ц6С 30Ts6S	2C 2S
6Н12С 6N12S	26C 26S	1502	29C 29S
6Н13С 6N13S	1C 1S	1515	5C 5S
6П3С 6P3S	3C 3S	1540	25C 25S

(Above material published April 1959, PKB, Dimension-Drawing Numbers, Sheet 2)

b) In metal envelope

1) Tube type; 2) Drawing No.

Тип лампы	1	2	Номер чертежа	Тип лампы	1	2	Номер чертежа
6A7			1M	6K4	6K4		1M
6B8	6B8		4M	6K7	6K7		4M
6Г1	6Г1		1M	6П9	6P9		5M
6Г2	6Г2		1M	6П9-Е	6P9-ye		5M
6Г7	6Г7		3M	12Г1	12G1		1M
6Ж3	6Zh3		1M	12Г2	12G2		1M
6Ж4	6Zh4		2M	12Ж8	12Zh8		2M
6Ж4-Е	6Zh4-ye		2M	12K3			1M
6Ж7	6Zh7		4M	12K4			1M
6Ж8	6Zh8		2M	1511			2M
6Ж8-Е	6Zh8-ye		2M	1512			5M
6K3	6K3		1M	1514			2M

c) Locktal base

1) Tube type; 2) Drawing No.

Тип лампы	1	2	Номер чертежа	Тип лампы	1	2	Номер чертежа
2Ж27Л	2Zh27L	3Л	3L	10Ж1Л	10Zh1L	4Л	4L
2П29Л	2P29L	4Л	3L	10Ж3Л	10Zh3L	4Л	4L
2Х1Л	2Kh1L	3Л	3L	12Ж1Л	12Zh1L	4Л	4L
1Ж1Л	1Zh1L	4Л	4L	12Ж3Л	12Zh3L	4Л	4L
4П1Л	4P1L	2Л	2L	12П17Л	12P17L	1Л	4L

(Above material published April 1959, PKB, Dimension-Drawing Numbers, Sheet 2)

d) Miniature tubes

1) Tube type; 2) Drawing No.

Тип лампы 1	Номер чертежа 2	Тип лампы 1	Номер чертежа 2
1A1П 1A1P	5П 5P	6K4П-Е 6K4P-ye	7П 7P
1A2П 1A2P	5П	6H1П 6N1P	13П
1B1П 1B1P	5П	6H1П-В 6N1P-V	13П
1B2П 1B2P	5П	6H1П-Е 6N1P-ye	15П
1H2П 1I2P	15П	6H2П 6N2P	13П
1K1П 1K1P	5П	6H2П-В 6N2P-V	13П
1K2П 1K2P	5П	6H2П-Е 6N2P-ye	15П
1C12П 1S12P	5П	6H3П 6N3P	13П
1Ц11П 1T511P	10П	6H3П-И 6N3P-I	15П
2Ж27П 2Zh27P	11П	6H4П 6N4P	14П
2П1П 2P1P	5П	6H5П 6N5P	13П
2П2П 2P2P	5П	6H6П 6N6P	17П
2П29П 2P29P	11П	6H6П-И 6N6P-I	17П
5Ц12П 5T512P	18П	6H14П 6N14P	15П
6A2П 6A2P	3П	6H15П 6N15P	4П
6A3П 6A3P	9П	6П1П 6P1P	17П
6Г3П 6G3P	15П	6П1П-В 6P1P-V	17П
6B1П 6V1P	18П	6П1П-Е 6P1P-ye	17П
6E1П 6Ye1P	17П	6П14П 6P14P	19П
6Ж1П 6Zh1P	2П	6П15П 6P15P	19П
6Ж1П-В 6Zh1P-V	2П	6П18П 6P18P	19П
6Ж1П-Е 6Zh1P-ye	2П	6C1П 6S1P	1П
6Ж2П 6Zh2P	2П	6C2П 6S2P	6П
6Ж2П-В 6Zh2P-V	2П	6C3П 6S3P	15П
6Ж2П-Е 6Zh2P-ye	3П	6C4П 6S4P	15П
6Ж3П 6Zh3P	4П	6Ф1П 6F1P	15П
6Ж4П 6Zh4P	8П	6X2П 6Kh2P	2П
6Ж5П 6Zh5P	3П	6X2П-В 6Kh2P-V	2П
6Ж9П 6Zh9P	12П	6X2П-Е 6Kh2P-ye	2П
6Ж9П-Г 6Zh9P-ye	12П	6X2П-И 6Kh2P-I	5П
6Ж10П 6Zh10P	12П	6Ц4П 6Ts4P	7П
6Ж11П 6Zh11P	15П	6Ц4П-В 6Ts4P-V	7П
6Ж21П 6Zh21P	15П	6Ц4П-Е 6Ts4P-ye	7П
6Ж22П 6Zh22P	16П	6Ц10П 6Ts10P	20П
6Ж23П 6Zh23P	15П	6Ц13П 6Ts13P	20П
6И1П 6I1P	19П	6Э5П 6E5P	18П
6K1П 6K1P	1П	6Э5П-Е 6E5P-ye	18П
6K4П 6K4P	7П	1538	4П
6K4П-В 6K4P-V	7П	1539	13П
		1550	7П

(Above material published April 1959, PKB, Dimension-Drawing Numbers, Sheet 3)

e) Subminiature tubes

1) Tube type; 2) Drawing No.

Тип лампы	1	2	Номер чертежа	Тип лампы	1	2	Номер чертежа
06Ж6Б	06Zh6B	1Б	1Б	6Ж2Б	6Zh2B	5Б	5Б
06П2Б	06P2B	1Б	...	6Ж2Б-В	6Zh2B-V	5Б	...
1Ж17Б	1Zh17B	11Б		6Ж5Б	6Zh5B	7Б	
1Ж18Б	1Zh18B	11Б		6Ж5Б-В	6Zh5B-V	7Б	
1П2Б	1P2B	2Б		6Ж10Б	6Zh10B	7Б	
1П3Б	1P3B	2Б		6Ж10Б-В	6Zh10B-V	7Б	
1П4Б	1P4B	2Б		6Н16Б	6N16B	9Б	
2Ж14Б	2Zh14B	10Б		6Н17Б	6N17B	9Б	
2Ж15Б	2Zh15B	10Б		6С3Б	6S3B	6Б	
2П19Б	2P19B	10Б		6С6Б	6S6B	4Б	
2С14Б	2S14B	8Б		6С6Б-В	6S6B-V	4Б	
6Д6А	6D6A	3Б		6С7Б	6S7B	4Б	
6Д6А-В	6D6A-V	3Б		6С7Б-В	6S7B-V	4Б	
6Ж1Б	6Zh1B	5Б		6Х7Б	6Kh7B	9Б	
6Ж1Б-В	6Zh1B-V	5Б					

f) "Acorn"-type tubes

1) Tube type; 2) Drawing No.

Тип лампы	1	2	Номер чертежа	Тип лампы	1	2	Номер чертежа
6Д4Ж	6D4Zh	1Ж	1Zh	6К1Ж	6K1Zh	2Ж	2Zh
6Ж1Ж	6Zh1Zh	2Ж	2Zh	6С1Ж	6S1Zh	1Ж	1Zh

(Above material published April 1959, PKB, Dimension-Drawing Numbers, Sheet 3)

g) With disk leads

1) Tube type; 2) Drawing No.

Тип лампы	1	2	Номер чертежа
6Д13Д	6D3D	5Д	5D
6Д10Д	6D10D	1Д	1D
6С5Д	6S5D	6Д	6D
6С9Д	6S9D	6Д	6D
6С11Д	6S11D	3Д	3D
6С13Д	6S13D	4Д	4D
6С16Д	6S16D	2Д	2D
1504		6Д	6D

h) In ceramic shell

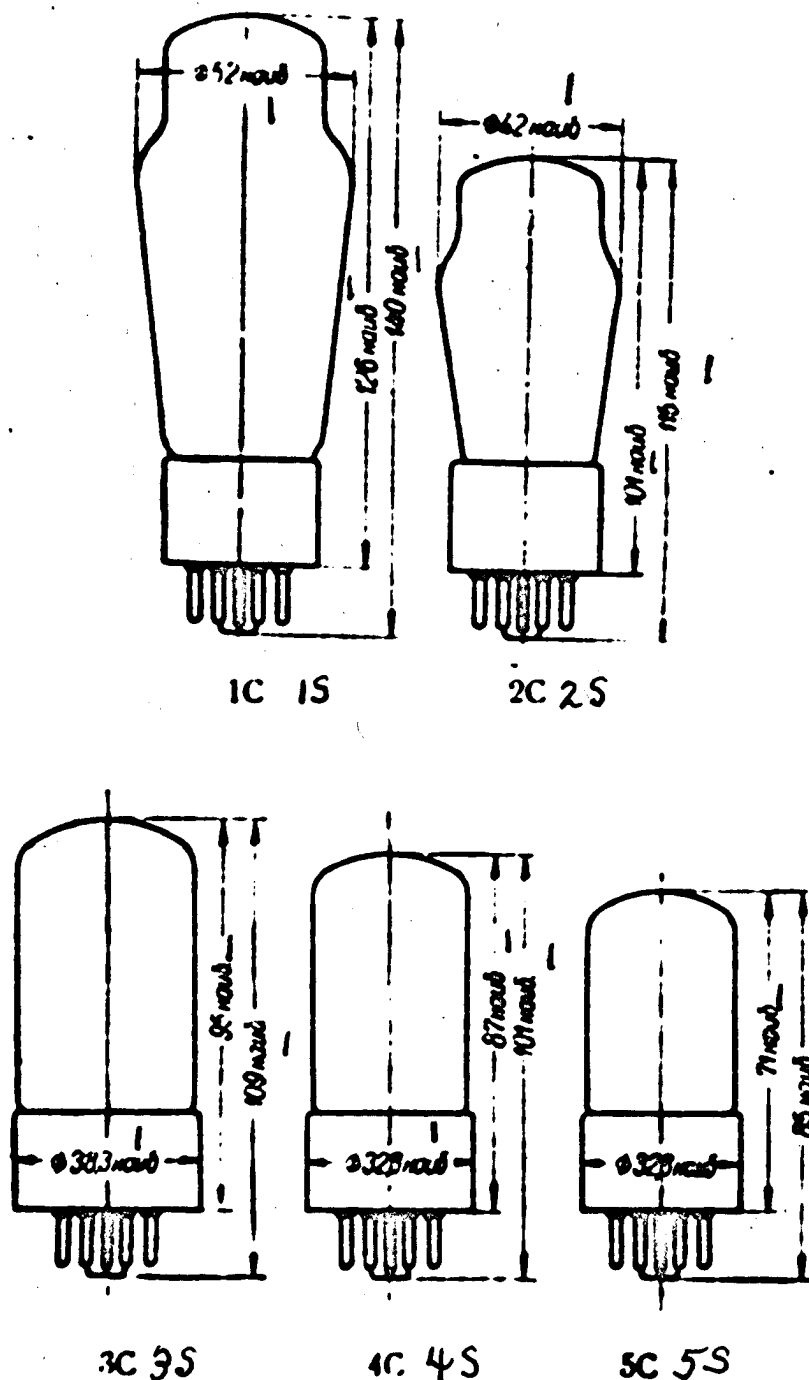
1) Tube type; 2) Drawing No.

Тип лампы	1	2	Номер чертежа
6С17К	6S17K	1К	1K

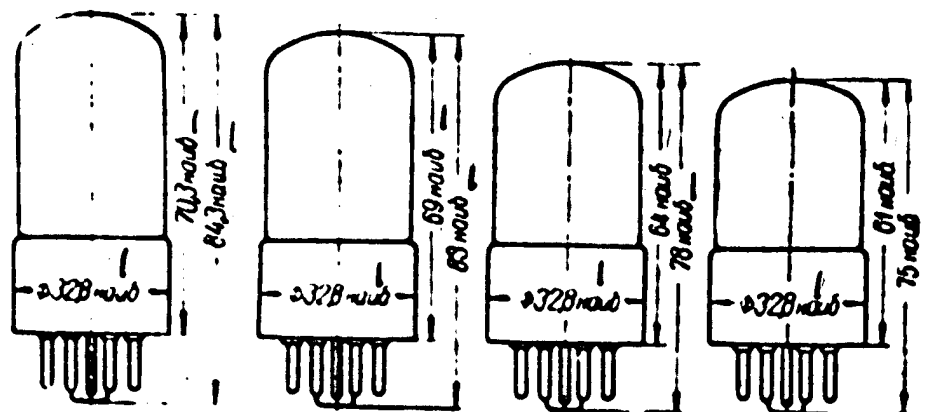
(Above material published April 1959, PKB, Dimension-Drawing Numbers,
Sheet 4)

DIMENSION DRAWINGS FOR RECEIVING-AMPLIFYING TUBES AND
LOW-POWER RECTIFIER TUBES COVERED IN THE HANDBOOK

a) Glass Envelope. 1) Maximum.



(Above material published April 1959, PKB, Dimensions of Receiving Tubes in Glass Envelopes, G-1)

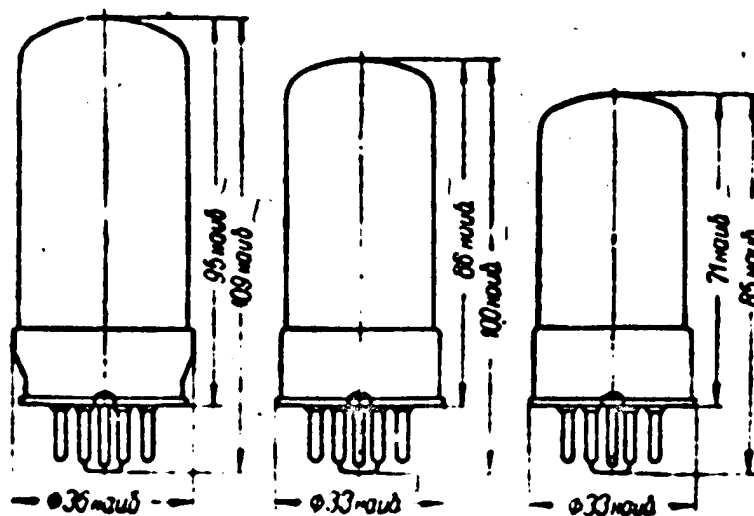


6C 6S

7C 7S

8C 8S

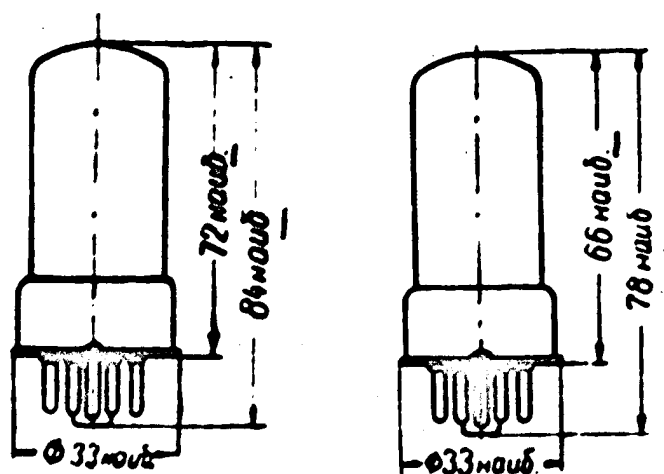
9C 9S



10C 10S

11C 11S

12C 12S

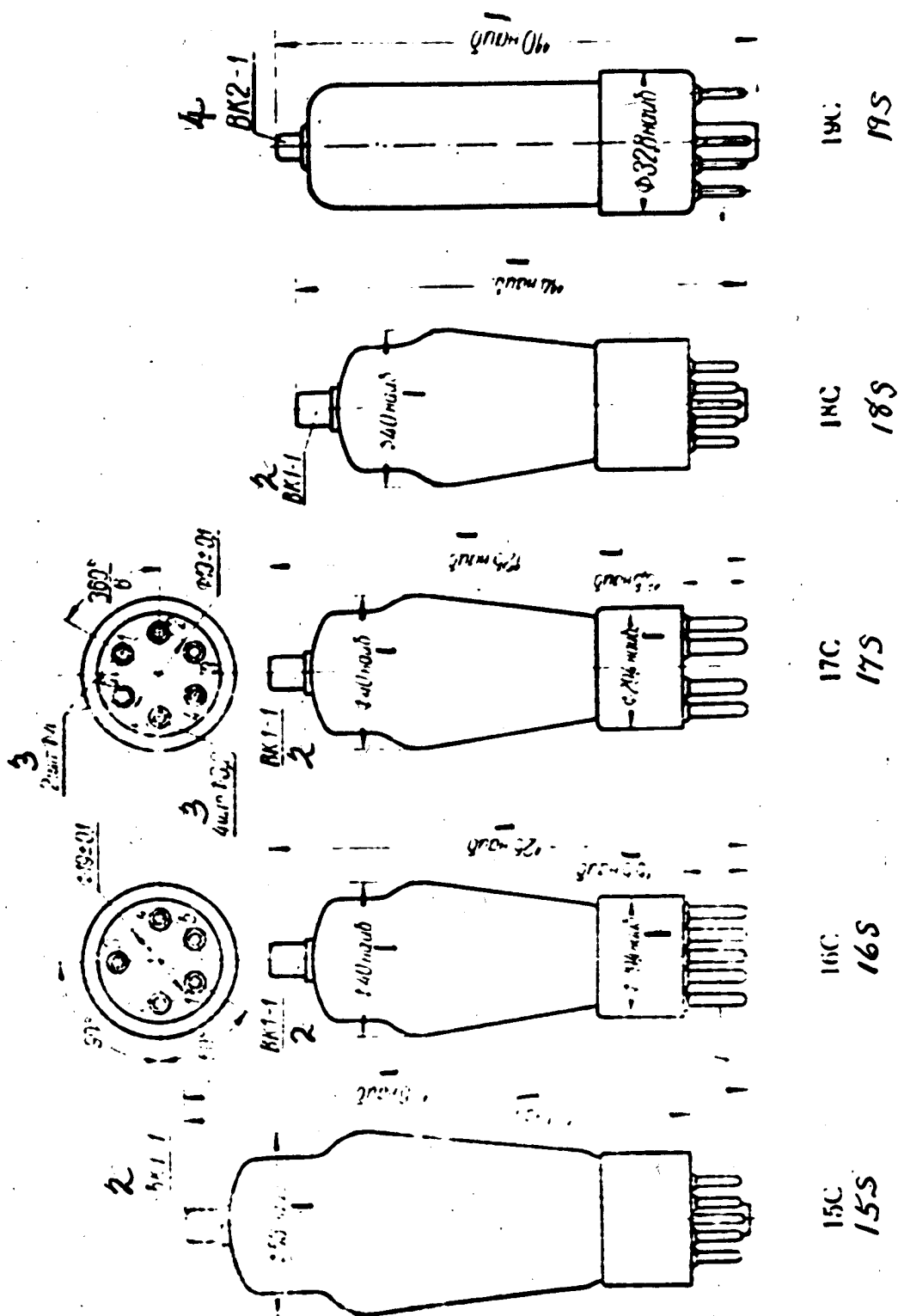


13C 13S

14C 14S

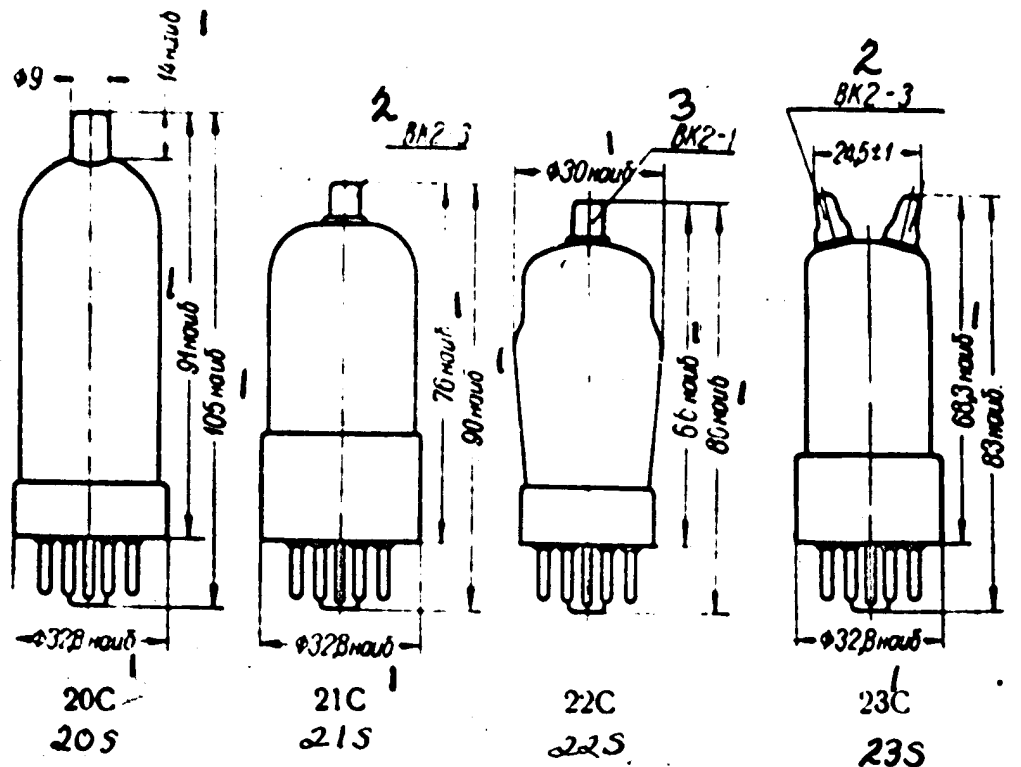
(Above material published April 1959, PKB, Dimensions of Receiving Tubes in Glass Envelopes, G-2)

1) Maximum; 2) VK1-1; 3) pins; 4) VK2-1



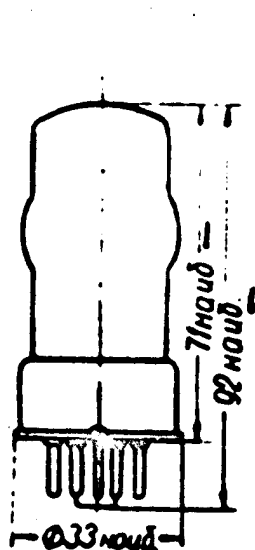
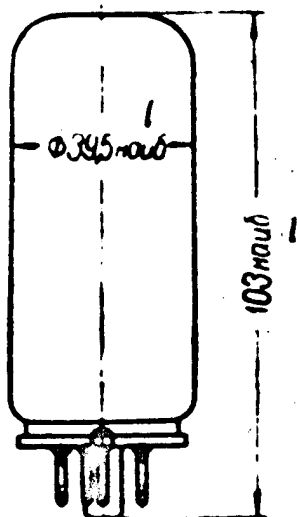
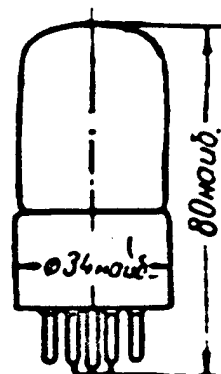
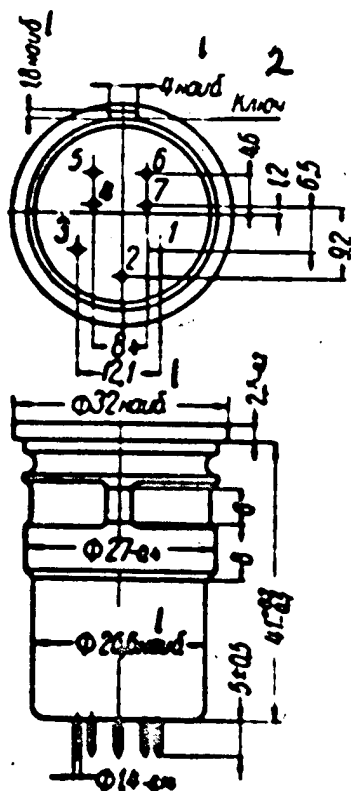
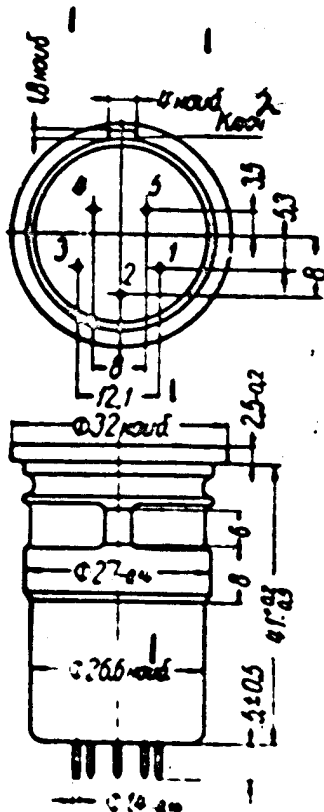
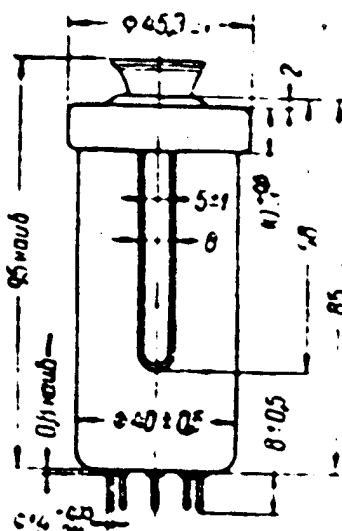
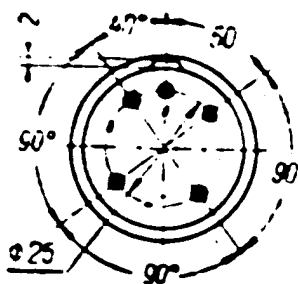
(Above material published April 1959, PKB, Dimensions of Receiving Tubes in Glass Envelopes, G-3)

1) Maximum; 2) VK2-3; 3) VK2-1.



(Above material published April 1959, PKB, Dimensions of Receiving Tubes in Glass Envelopes, G-4)

1) Maximum; 2) key.

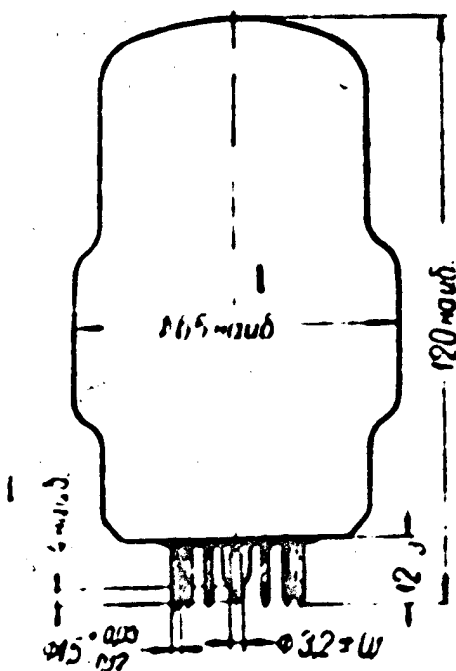
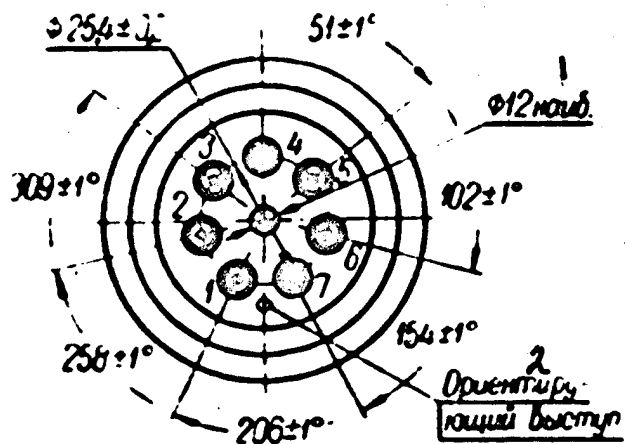
24C
24S25C
25S26C
26S27C
27S28C
28S

PULL TOCT 29C

29C
29S

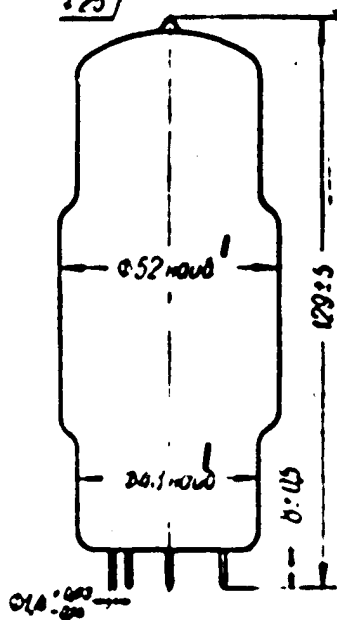
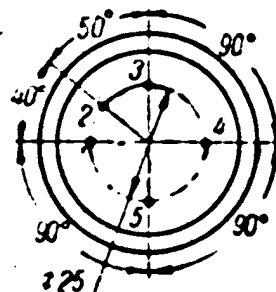
(Above material published April 1959, PKB, Dimensions of Receiving Tubes in Glass Envelopes, G-5)

1) Maximum; 2) locating pin; 3) RSh3-GOST 7842-58; 4) RSh6-GOST 7842-58.



3 RSh3-GOST 7842-58

305



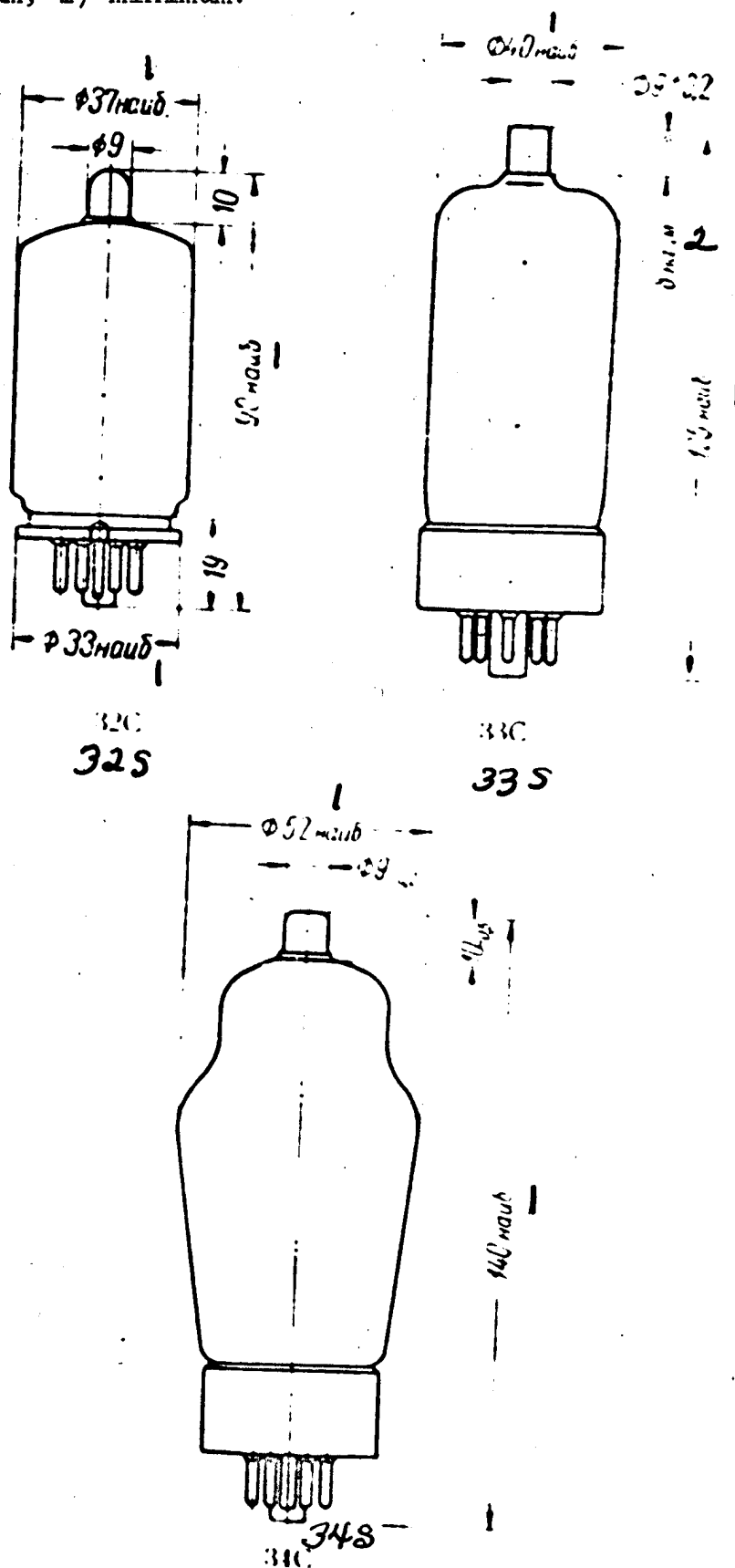
4 RSh6-GOST 7842-58

310

315

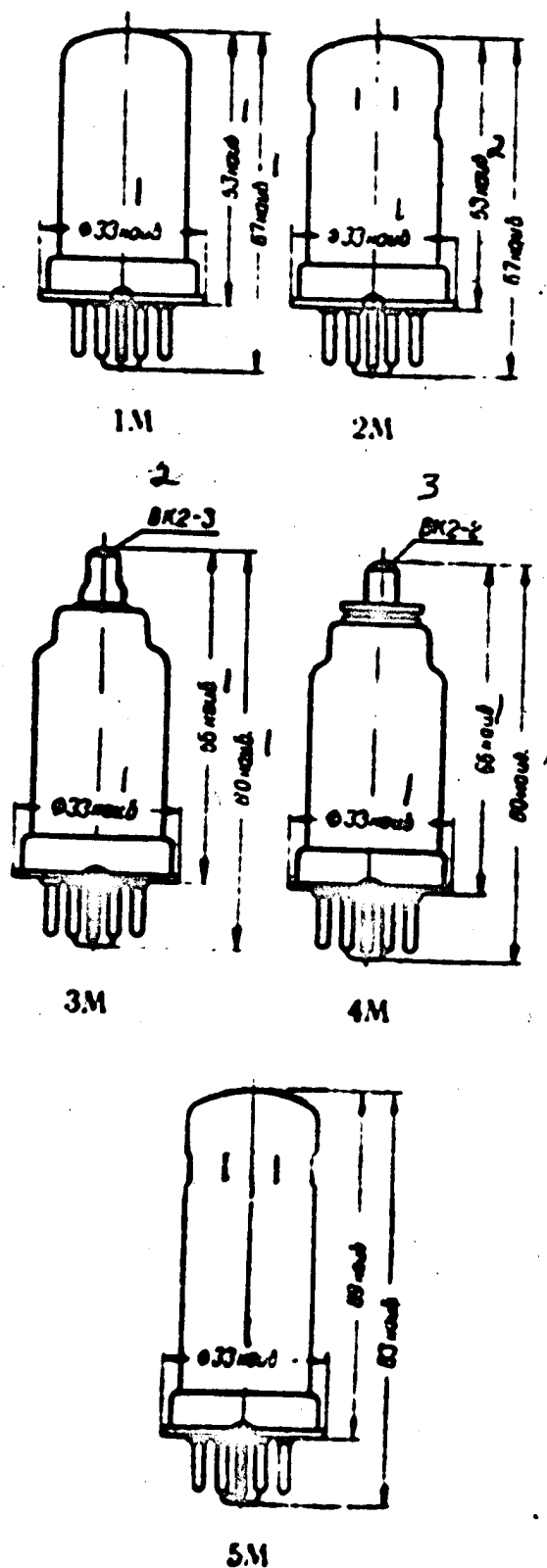
(Above material published April 1959, PKB, Dimensions of Receiving Tubes in Glass Envelopes, G-6)

1) Maximum; 2) minimum.



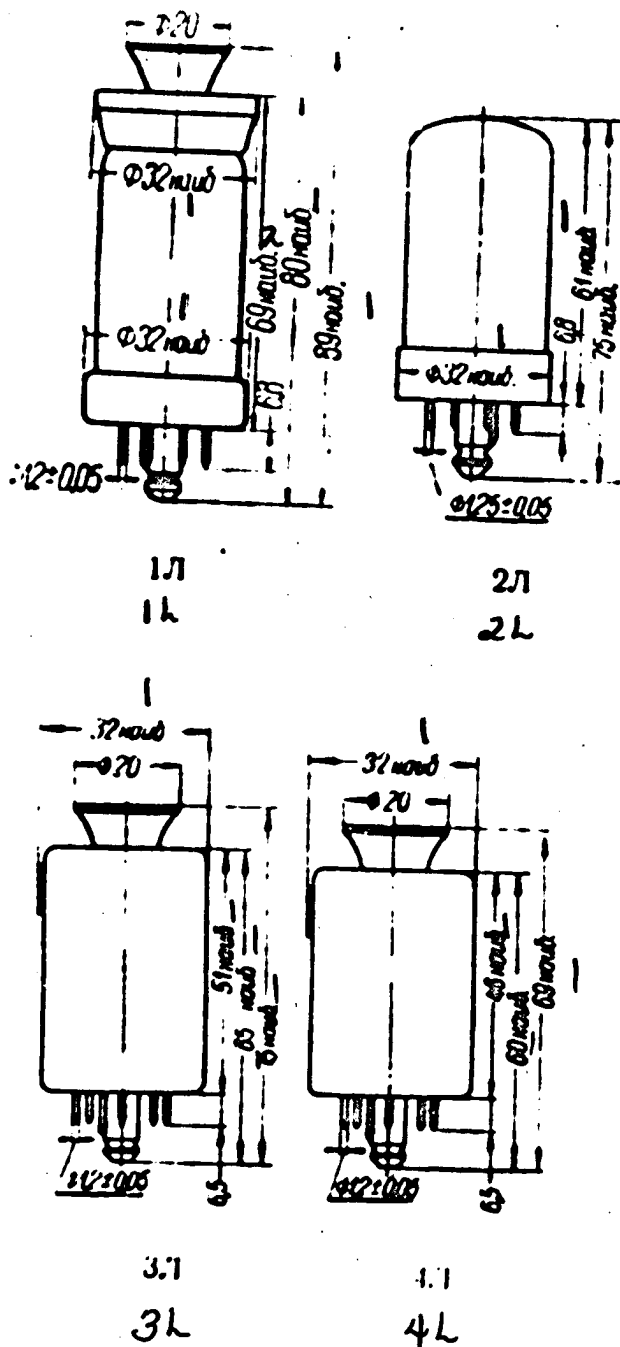
(Above material published April 1959, PKB, Dimensions of Receiving Tubes in Glass Envelopes, G-7)

b) In Metal Envelopes. 1) Maximum; 2) VK2-3; 3) VK2-2.



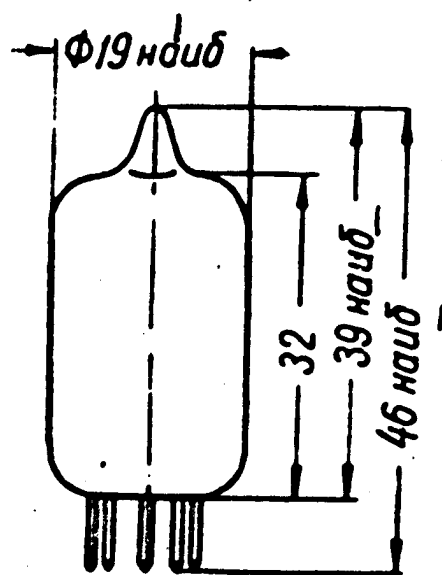
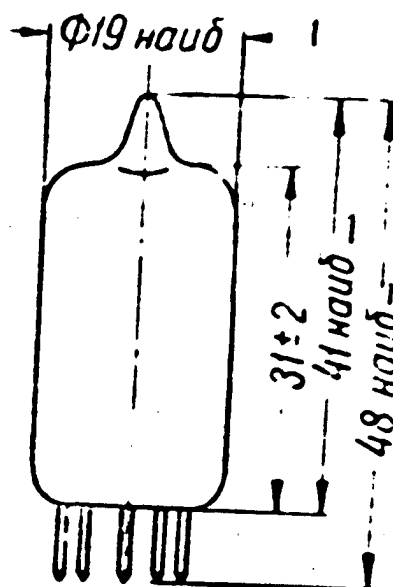
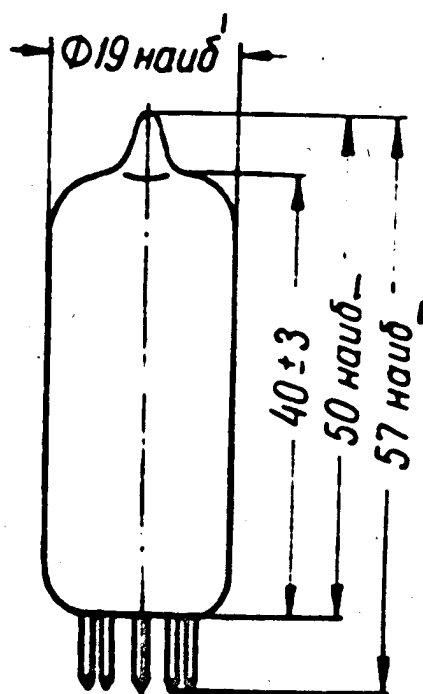
(Above material published April 1959, PKB, Dimensions of Receiving Tubes in Metal Envelopes, G-1)

c) Locktal-Base Types. 1) Maximum.

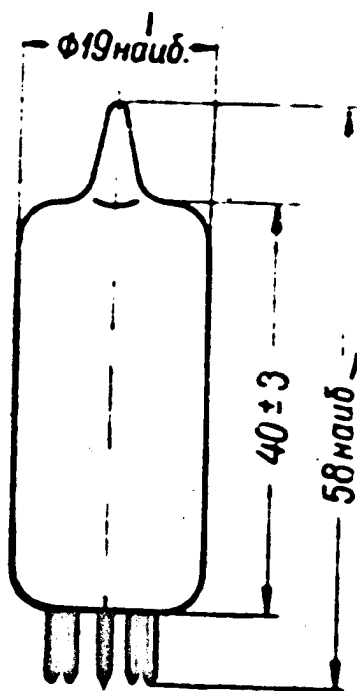


(Above material published April 1959, PKB, Dimensions of Receiving Tubes with Locktal Bases, G-1)

d) Miniature Tubes. 1) Maximum.

1П
1Р2П
2Р

3П 3Р

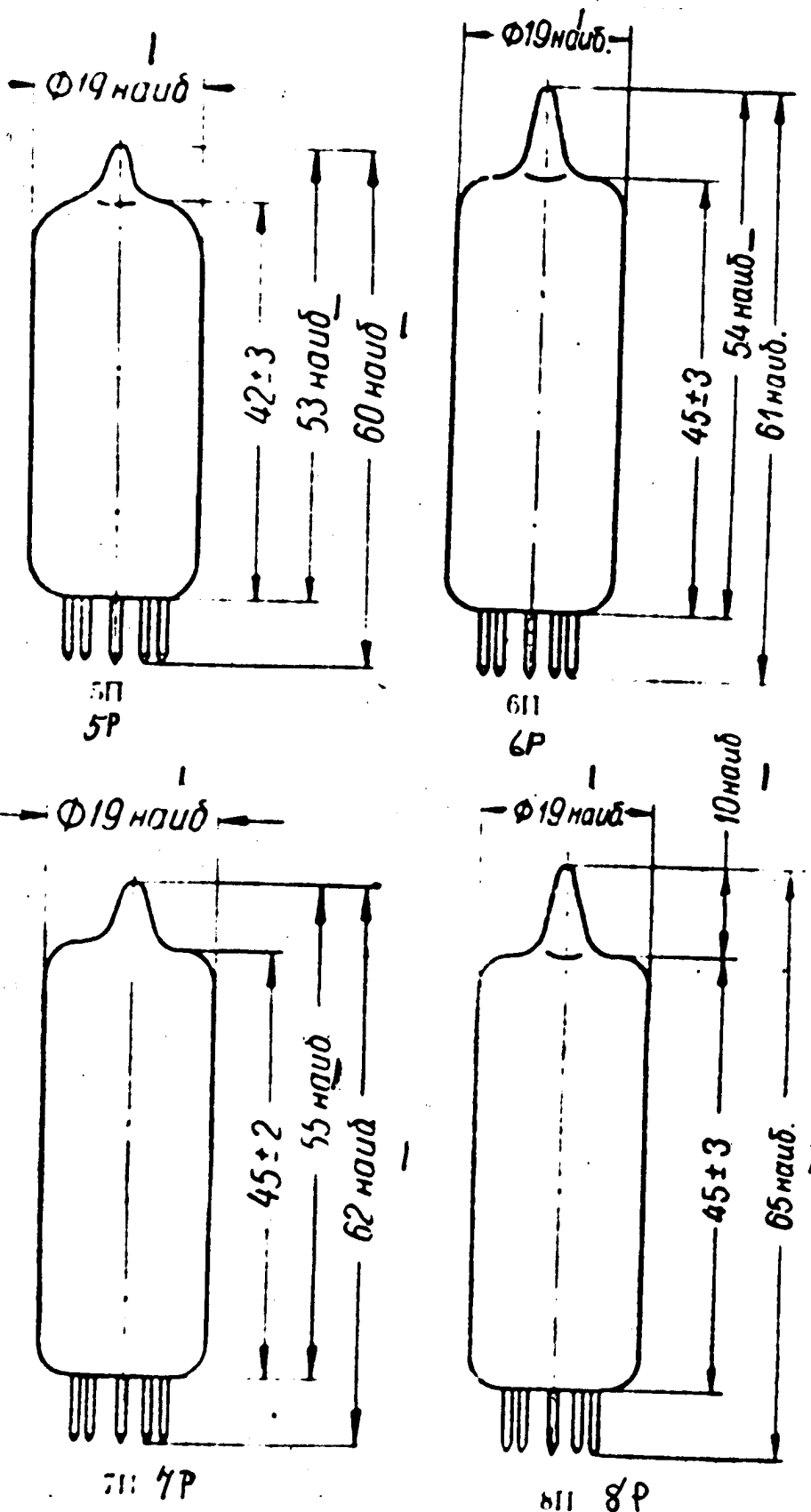


4П 4Р

Note. The arrangement and dimensions of the pins are to be found in the "General Section" (miniature-type tubes, sheet 1).

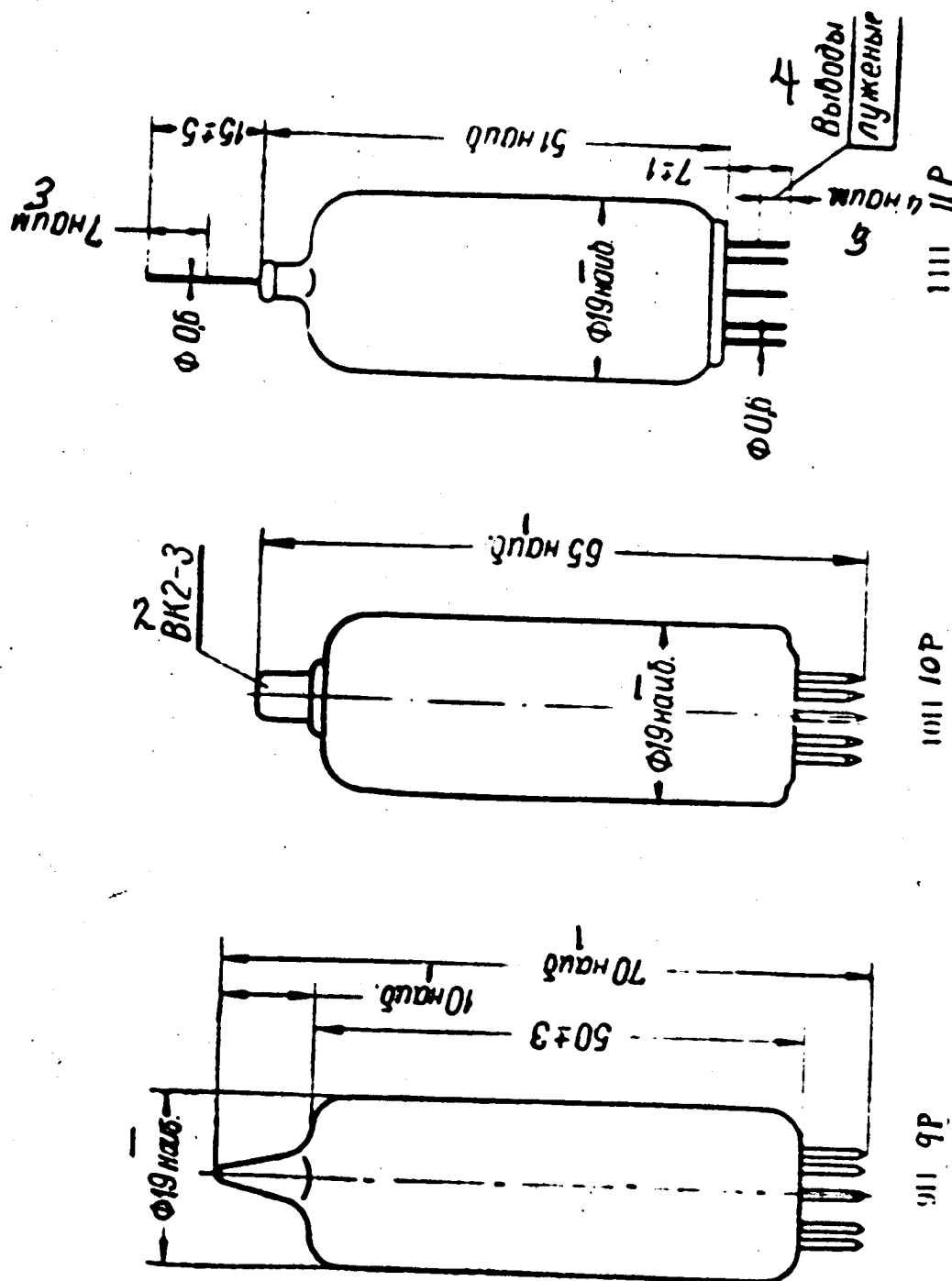
(Above material published April 1959, PKB, Dimensions of Miniature Receiving Tubes, G-1)

1) Maximum.



Note. The arrangement and dimensions of pins are to be found in the "General Section" (miniature-tube pins, sheet 1).
 (Above material published April 1959, PKB, Dimensions of Miniature Receiving Tubes, G-2)

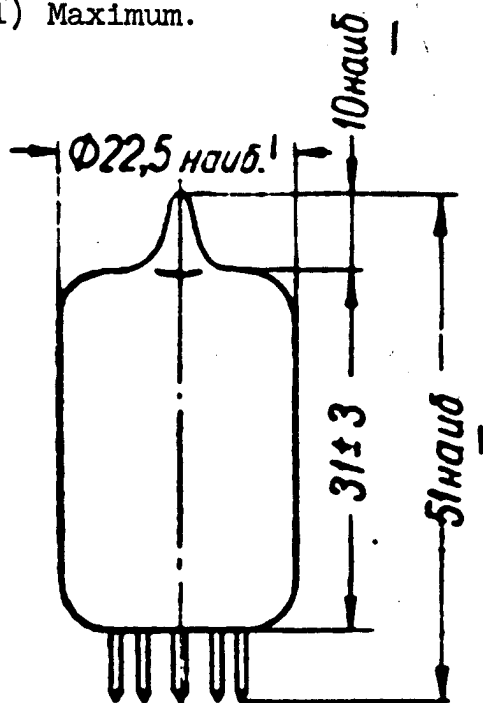
1) Maximum; 2) VK2-3; 3) minimum; 4) tinned leads.



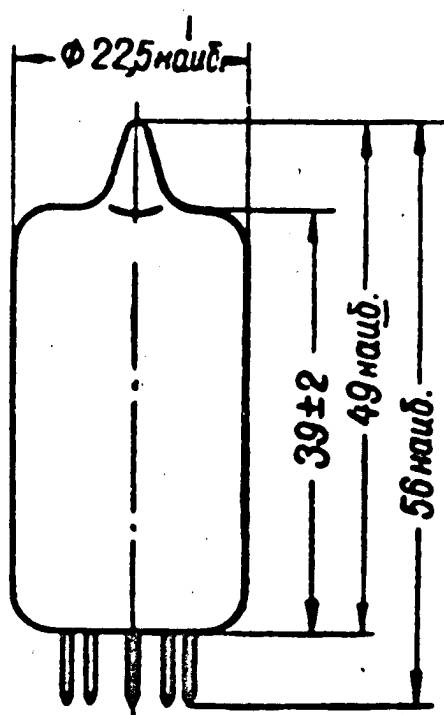
Note. Arrangement and dimensions of pins are shown in "General Section" (miniature-tube pins, sheet 1).

(Above material published April 1959, PKB, Dimensions of Miniature Receiving Tubes, G-3)

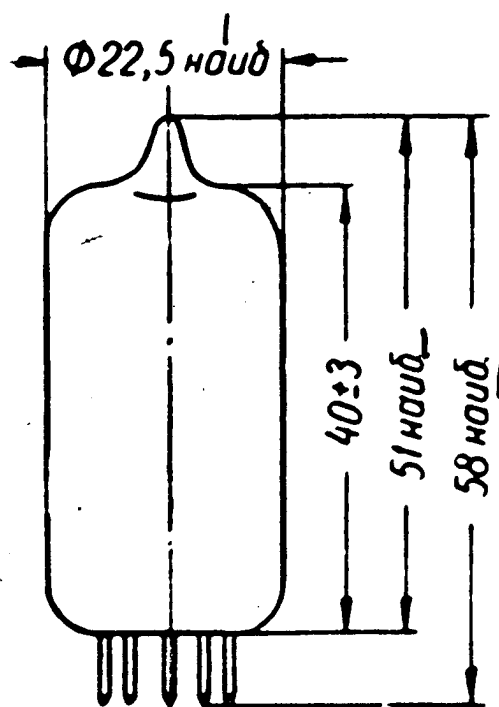
1) Maximum.



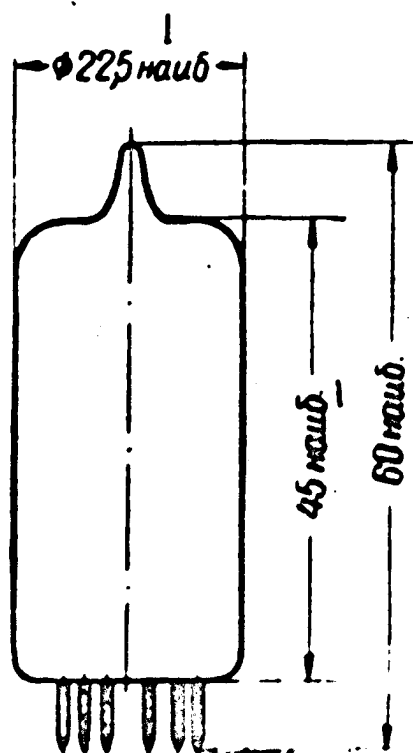
12П 12Р



13П 13Р



14П 14Р

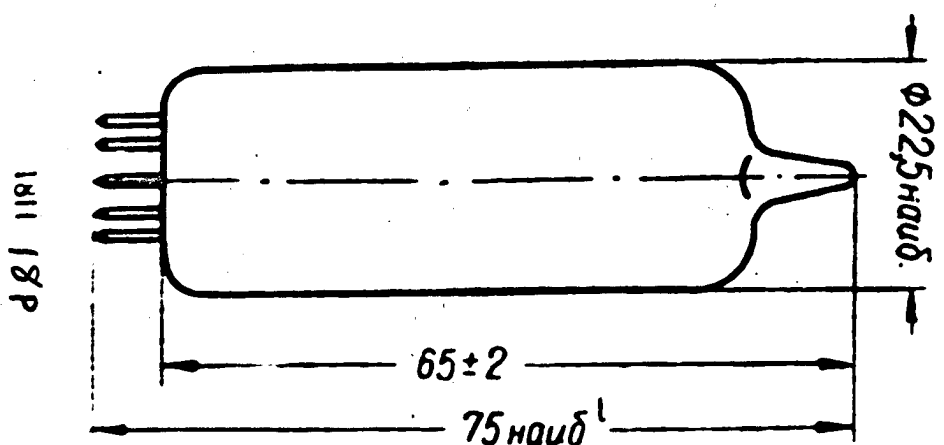
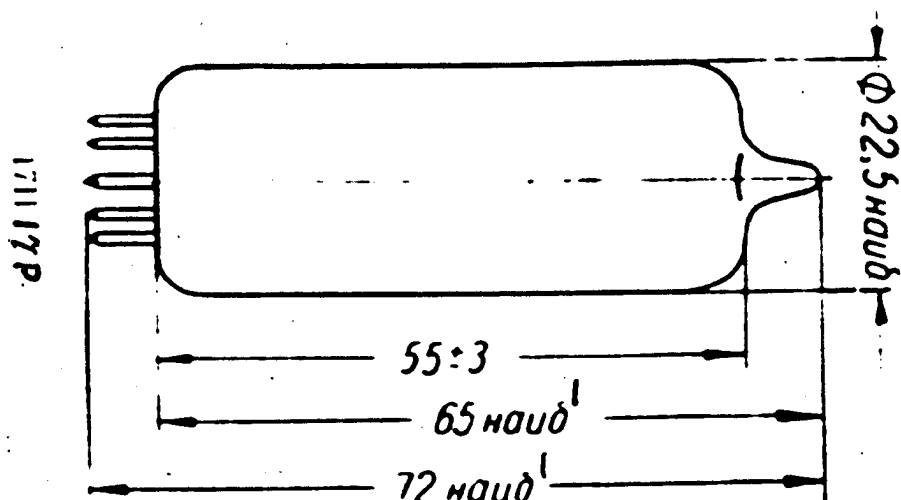
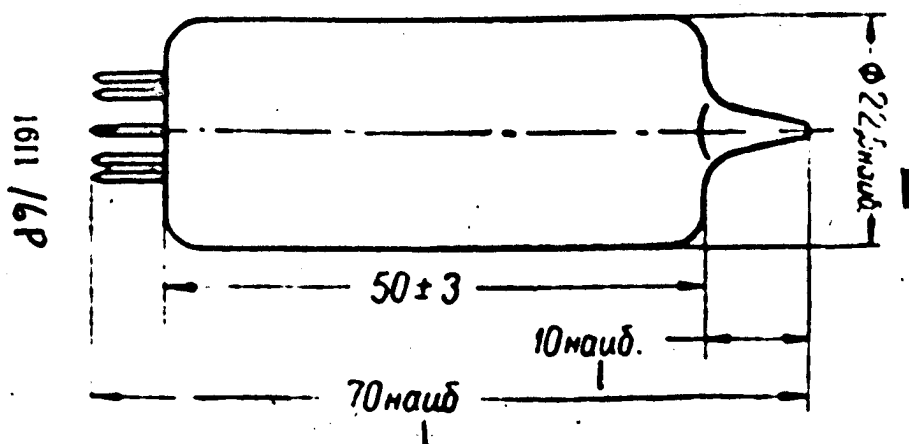


15П 15Р

Note. Arrangement and dimensions of pins are shown in "General Section" (miniature-tube pins, sheet 1).

(Above material published April 1959, PKB, Dimensions of Miniature Receiving Tubes, G-4)

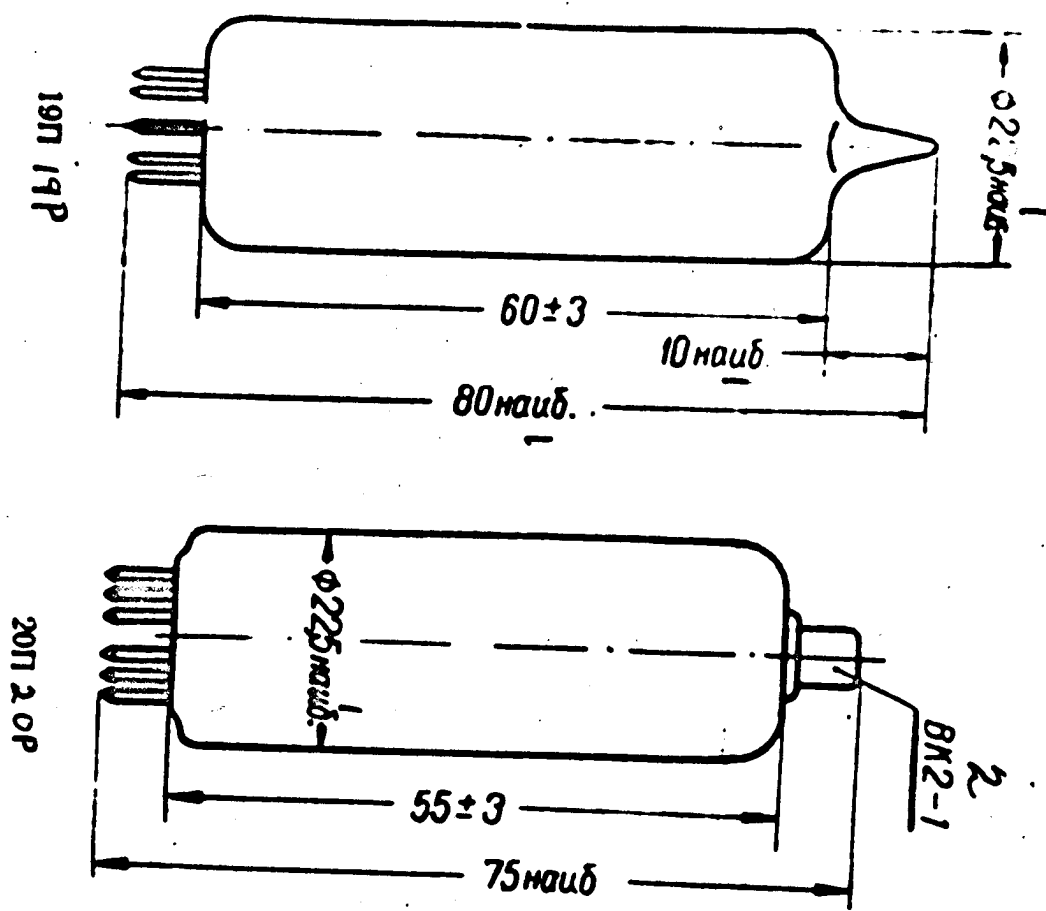
1) Maximum.



Note. Arrangement and dimensions of pins are shown in "General Section" (miniature-tube pins, sheet 1).

(Above material published April 1959, PKB, Dimensions of Miniature Receiving Tubes, G-5)

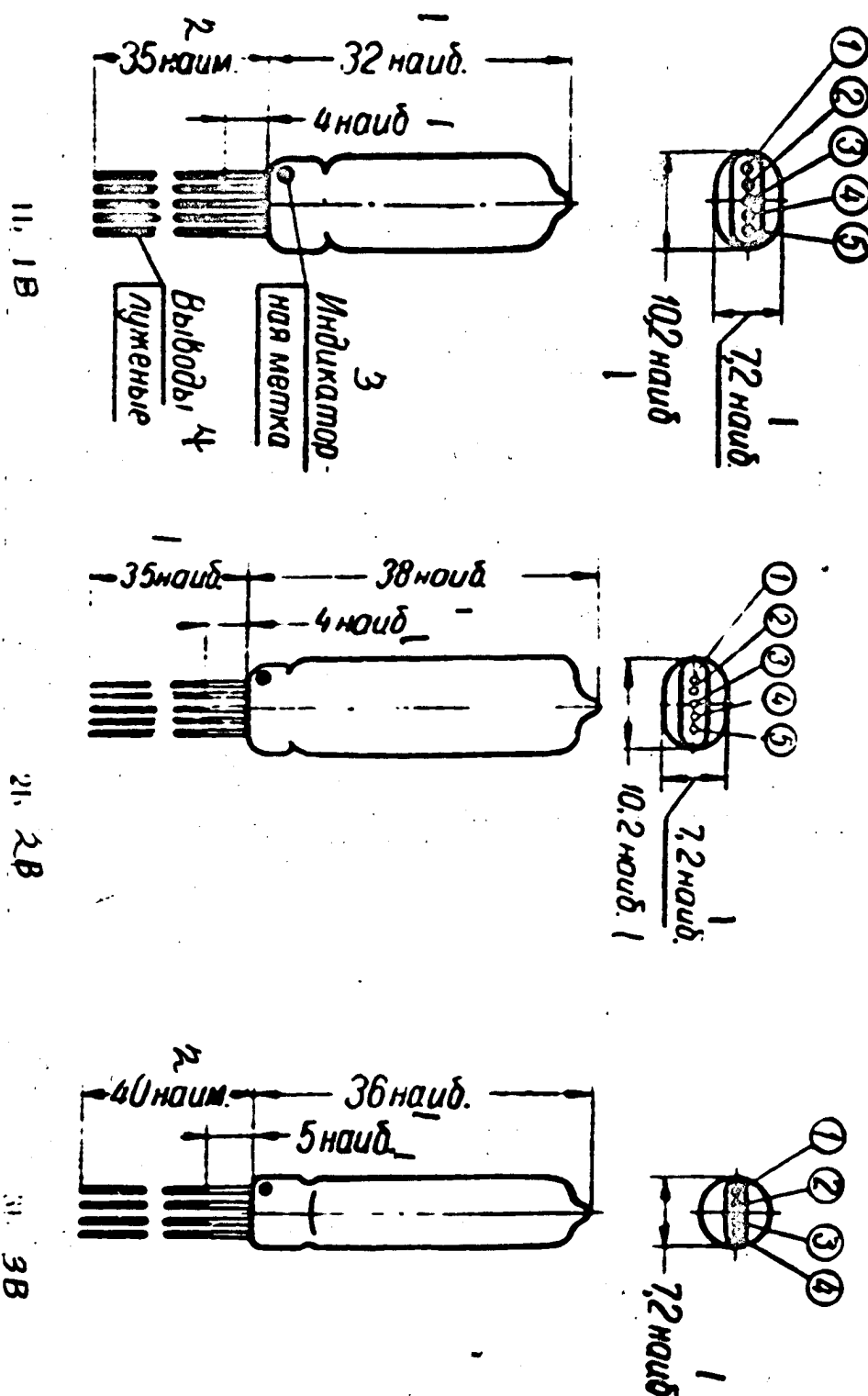
1) Maximum; 2) VK2-1.



Note. Arrangement and dimensions of pins shown in "General Section" (miniature-tube pins, sheet 1).

(Above material published April 1959, PKB, Dimensions of Miniature Receiving Tubes, G-6)

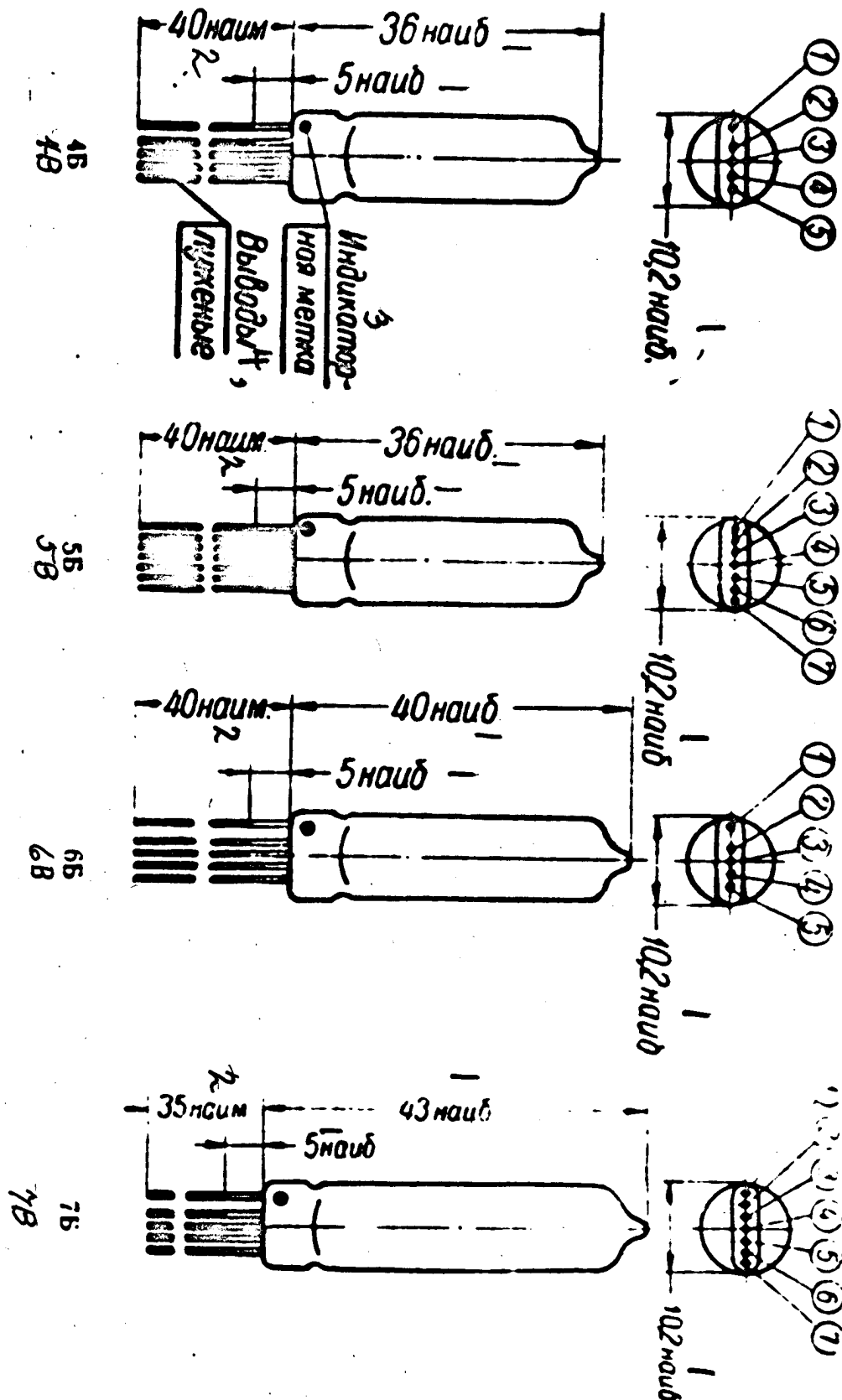
e) Subminiature Tubes. 1) Maximum; 2) minimum; 3) indicator dot; 4) tinned leads.



Note. Leads are counted beginning from the indicator dot.

(Above material published April 1959, PKB, Dimensions of Subminiature Receiving Tubes, G-1)

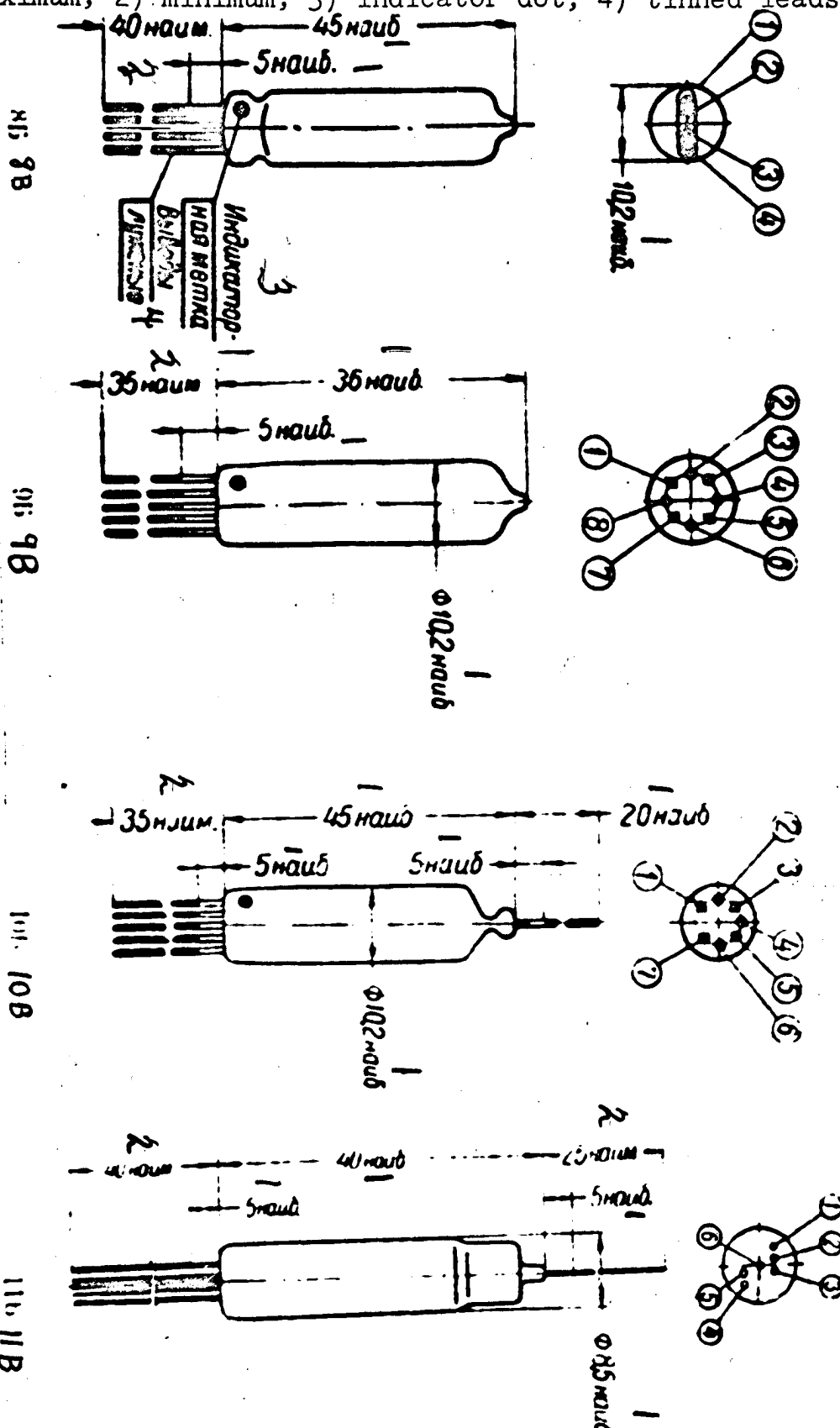
1) Maximum; 2) minimum; 3) indicator dot; 4) tinned leads.



Note. Leads are counted beginning at the indicator dot.

(Above material published April 1959, PKB, Dimensions of Subminiature Receiving Tubes, G-2)

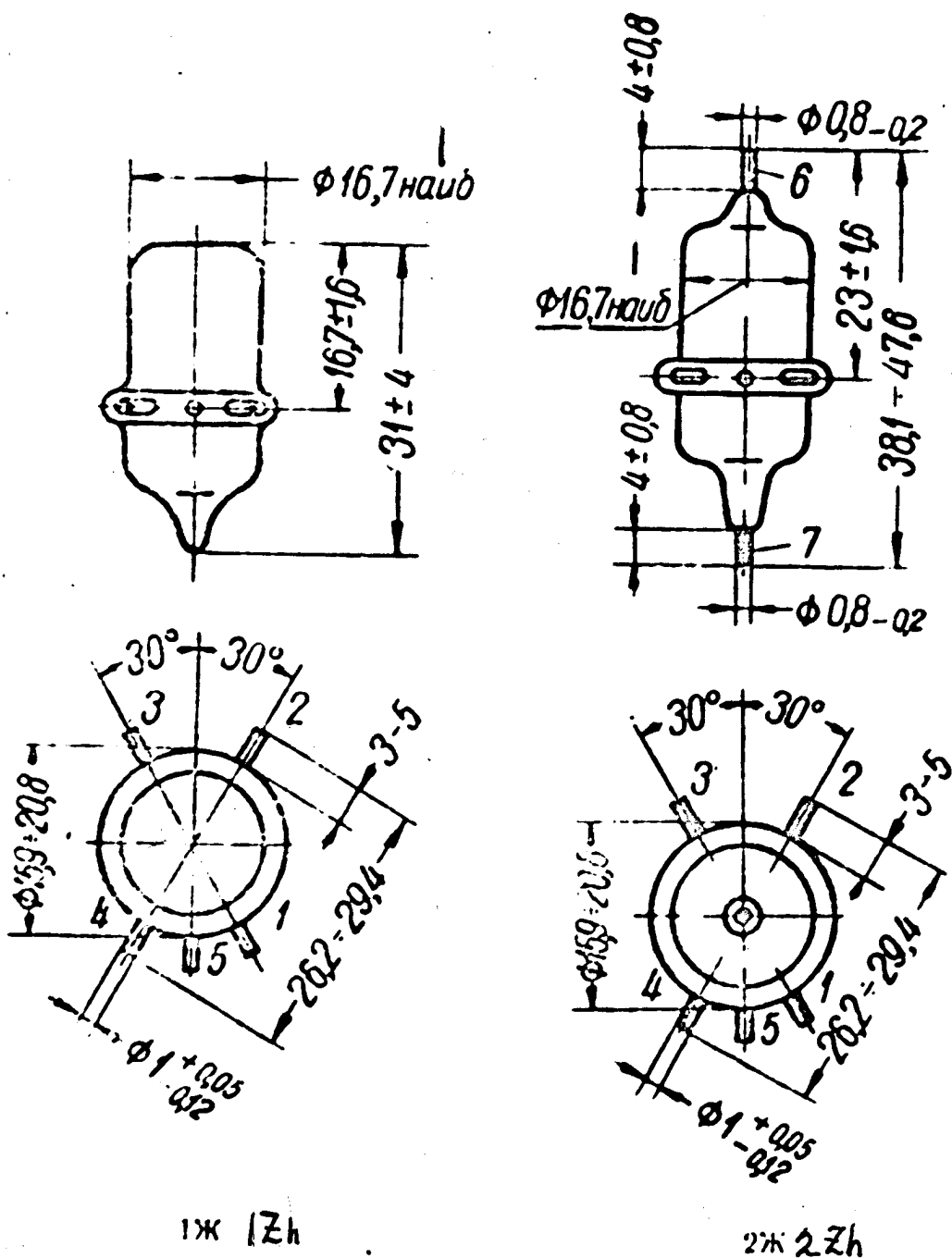
1) Maximum; 2) minimum; 3) indicator dot; 4) tinned leads.



Note. Leads are counted beginning at the indicator dot.

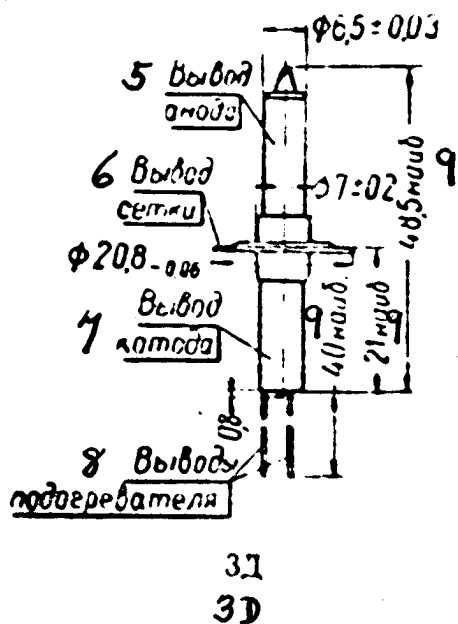
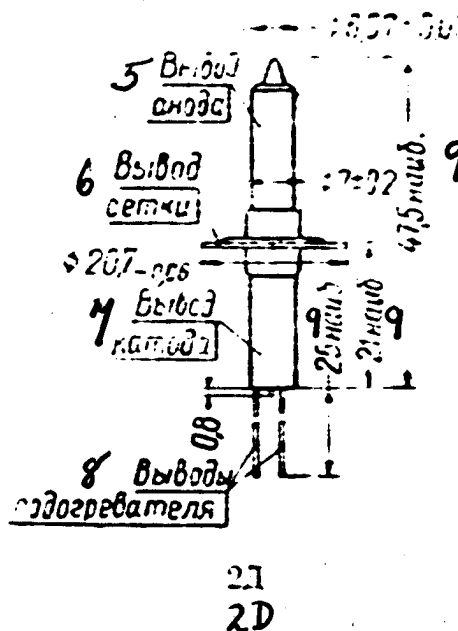
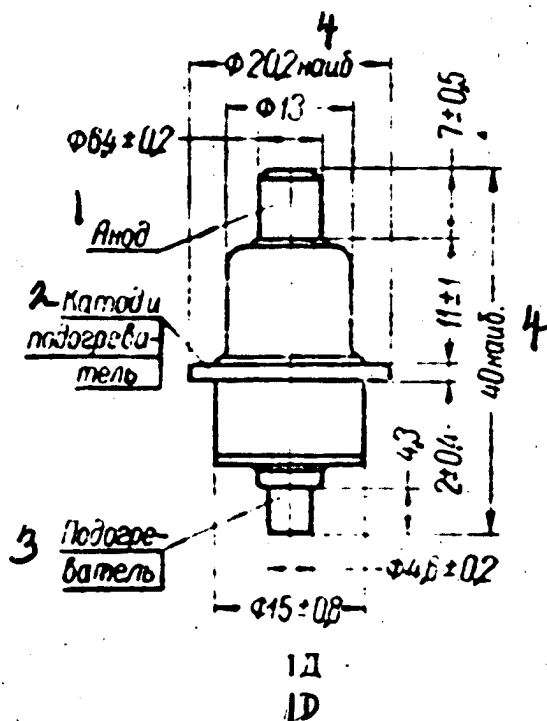
(Above material published April 1959, PKB, Dimensions of Subminiature Receiving Tubes, G-3)

f) "Acorn"-Type. 1) Maximum.

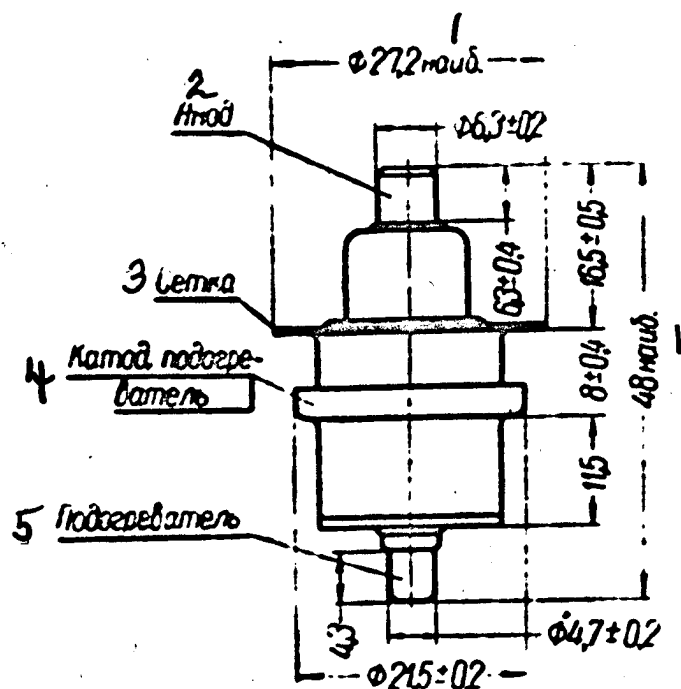


(Above material published April 1959, PKB, Dimensions of "Acorn" Receiving Tubes, G-1)

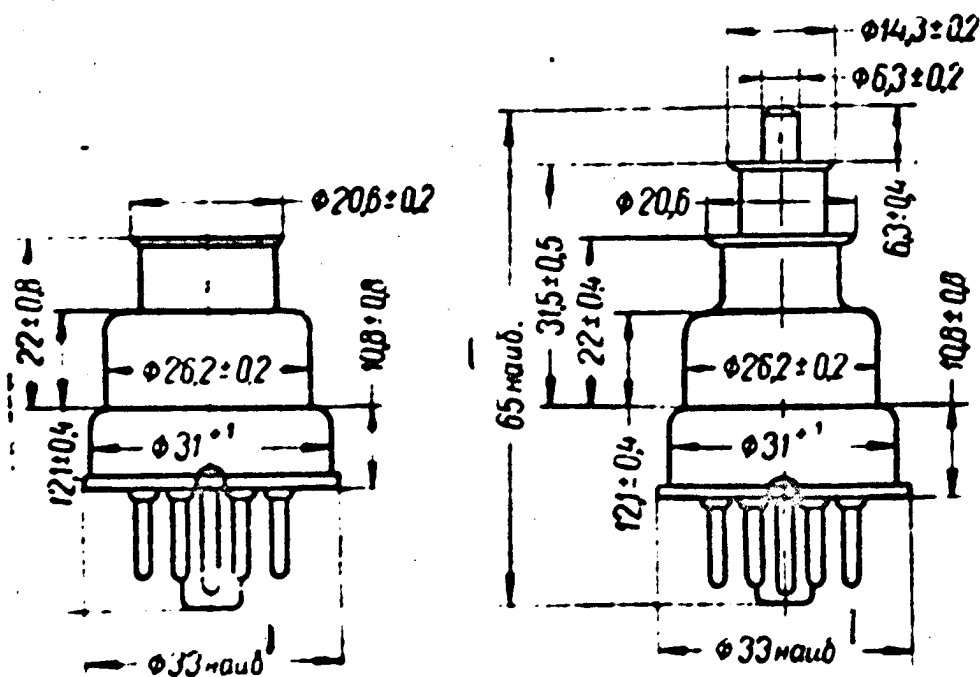
g) With Disk Leads. 1) Plate; 2) cathode-heater; 3) heater; 4) maximum; 5) plate leads; 6) grid leads; 7) cathode lead; 8) heater leads; 9) maximum.



- 1) Maximum; 2) plate; 3) grid; 4) cathode-heater; 5) heater.



4Л
4D

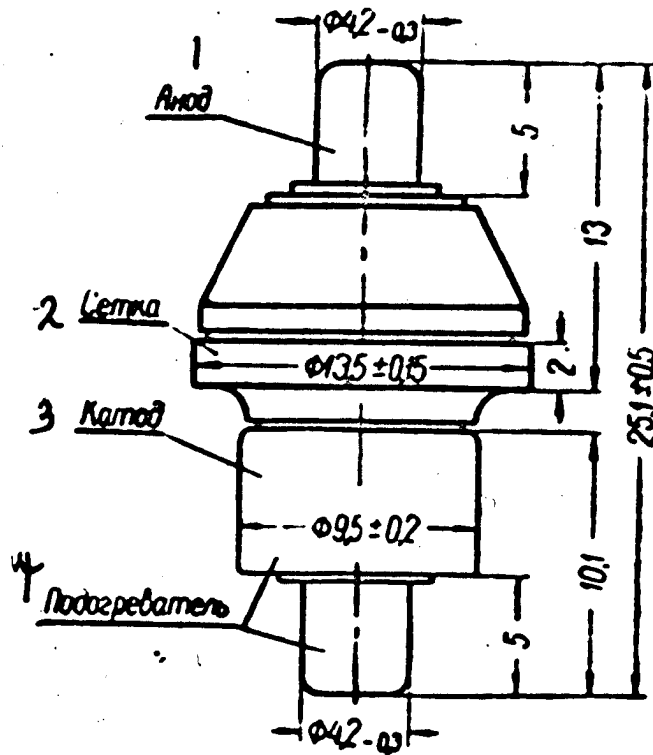


5Л
5D

6Л
6D

(Above material published April 1959, PKB, Dimensions of Receiving Tubes with Disk Leads, G-2)

h) In Ceramic Shell. 1) Plate; 2) grid; 3) cathode; 4) heater.



1K

(Above material published April 1959, PKB, Dimensions for Receiving Tubes in Ceramic Shells, G-1)

PENTODE

06Zh6B

* * *

Basic function — audio-frequency voltage amplification.

Construction — glass, subminiature.

General Data

Cathode — oxide-coated filament type	
Maximum height (without leads)	32 mm
Dimensions in horizontal projection, maximum	10.2 x 7.2 mm
Number of leads	5
Length of leads	no less than 35 mm
Lead diameter	0.4 mm
Maximum weight	2.5 grams
Dimension drawing — 1B.	

Connection diagram for electrodes with leads

1) Plate; 2) second grid; 3) cathode (positive side of filament); 4) first grid; 5) cathode (minus side of filament) and third grid; 6) indicator dot.

Electrical Data

Filament voltage (=)	0.625 v
Filament current	20 ± 2.5 ma
Plate voltage (=)	30 v
Screen-grid voltage (=)	30 v
First-grid voltage (=)	0 v
Plate current	150 μa
Screen-grid current	no more than 100 μa
Total plate and screen-grid current*	no more than 30 μa
Transconductance	no less than 110 μa/v
Dynamic amplification factor*	no less than 25

*With a plate-circuit resistor of 1 megohm, a 3-megohm resistance in the screen circuit, and 1 mv (eff) AC on the grid.

(Above material published April 1959, PKB, Sheet 1)

PENTODE

06Zh6B

Internal resistance (approximate value)	900 kohm
Service lifetime	500 hours
Life criterion:	
transconductance no less than	88 $\mu\text{a/v}$

Interelectrode Capacitances

→ Input	3 μf
→ Output	5 μf
Transfer	0.3 μf

Maximum Permissible Operating Data

Maximum filament voltage (=)	0.75 v
Minimum filament voltage (=)	0.5 v
Maximum plate voltage (=)	35 v
Maximum plate dissipation	8 mw
Maximum cathode current	350 μa
Maximum grid-circuit resistance	3 megohms

→ Change introduced.

(Above material published April 1959, PKB, Sheet 1)

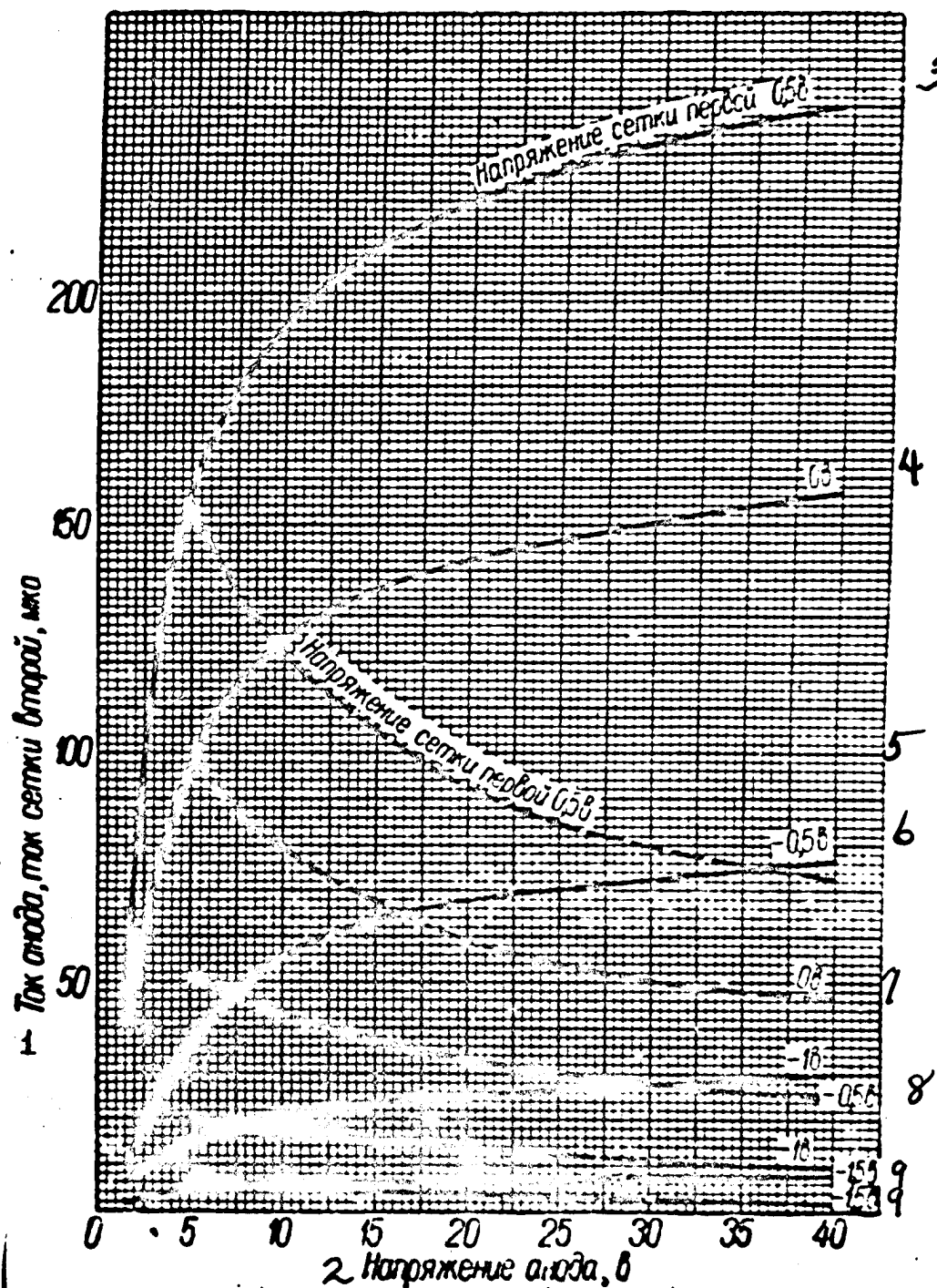
PENTODE

06Zh6B

* * * *

Averaged Characteristic Curves

— Plate
 - - - Grid-plate (for screen grid)
 Filament voltage 0.625 v
 Screen voltage 30 v



- 1) Plate current, screen-grid current, μA ; 2) plate voltage, v;
 3) grid voltage 0.5 v; 4) 0 v; 5) grid voltage 0.5 v; 6) -0.5 v;
 7) 0 v; 8) -0.5 v; 9) -15 v.

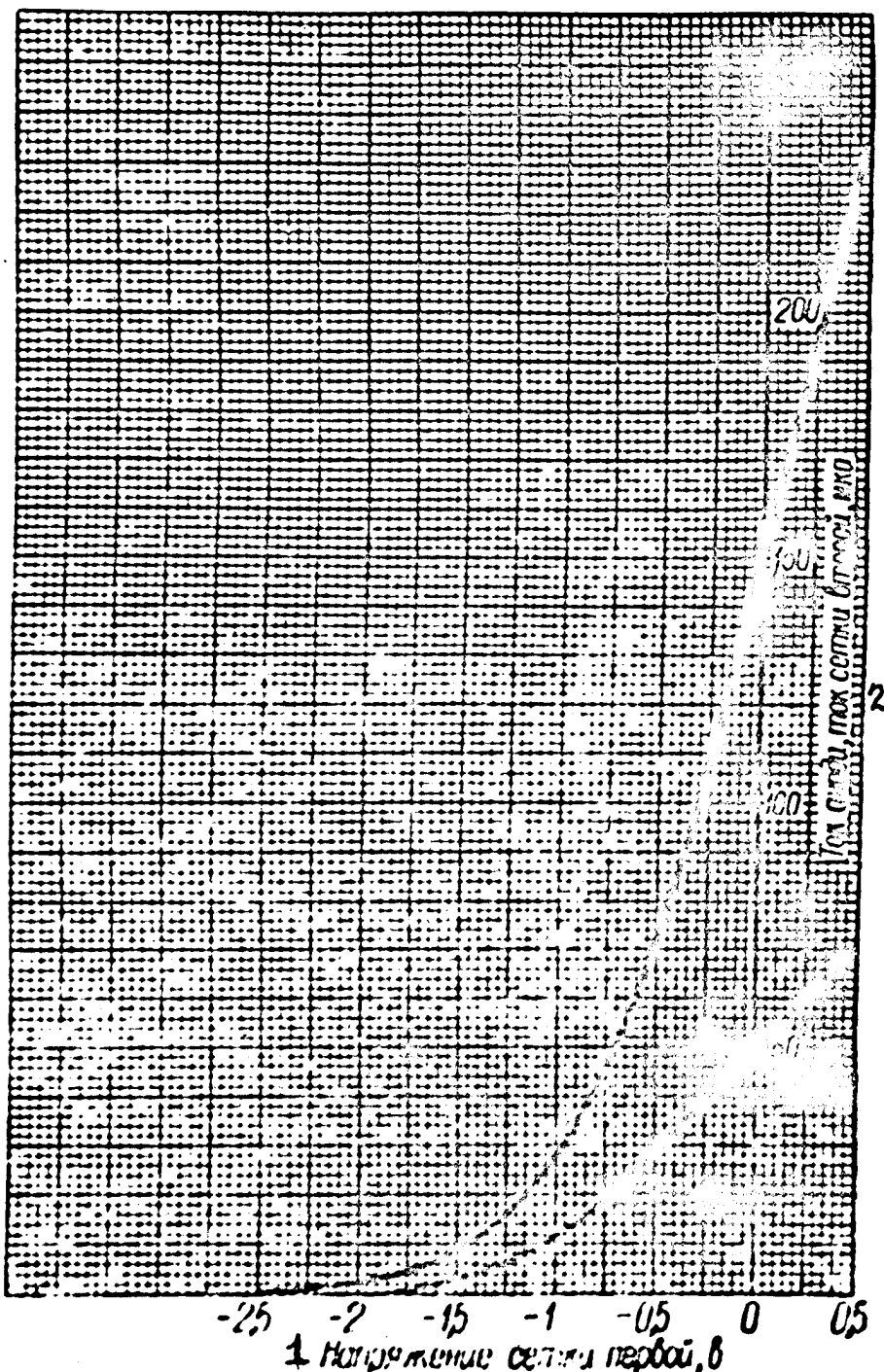
PENTODE

06Zh6B

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Averaged Characteristic Curves

— Plate grid
 - - - - - Grid (for screen grid)
 Filament voltage 0.625 v
 Plate voltage 30 v
 Screen voltage 30 v



1) Grid voltage, v; 2) plate current, screen current, μ a.

PENTODE

06P2B

* * * *

Basic function — audio-frequency voltage amplification.

Construction — glass subminiature.

General Data

Cathode — oxide-coated filament	
Maximum height (without leads)	32 mm
Dimensions in horizontal projection, maximum	10.2 x 7.2 mm
Number of leads	5
Length of leads	no less than 35 mm
Lead diameter	0.3 mm
Maximum weight	2.5 grams
Dimension drawing — 1B.	

Connection diagram for electrodes with leads

1) Plate; 2) screen grid; 3) cathode (positive side of filament); 4) first grid; 5) cathode (minus side of filament) and suppressor grid; 6) indicator dot.

Electrical Data

Filament voltage (=)	0.625 v
Filament current	30 ± 3 ma
Plate voltage (=)	$30 \overline{v}$
Screen voltage (=)	30 v
Grid voltage (=)	0 v
Plate current	no less than 90 μ a
Screen current	no less than 30 μ a
Total plate and screen current*	no more than 30 μ a
Transconductance	no less than 0.13 ma/v
Dynamic amplification factor*	no less than 30
Service life	500 hours
Service-life criteria: transconductance	0.12 ma/v

*With a plate-circuit resistance of 1 megohm, a screen-circuit resistance of 3 megohms, and 10 mv (eff) AC on the grid.

(Above material published April 1959, PKB, Sheet 1)

PENTODE

06P2B

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Average Characteristic Curves

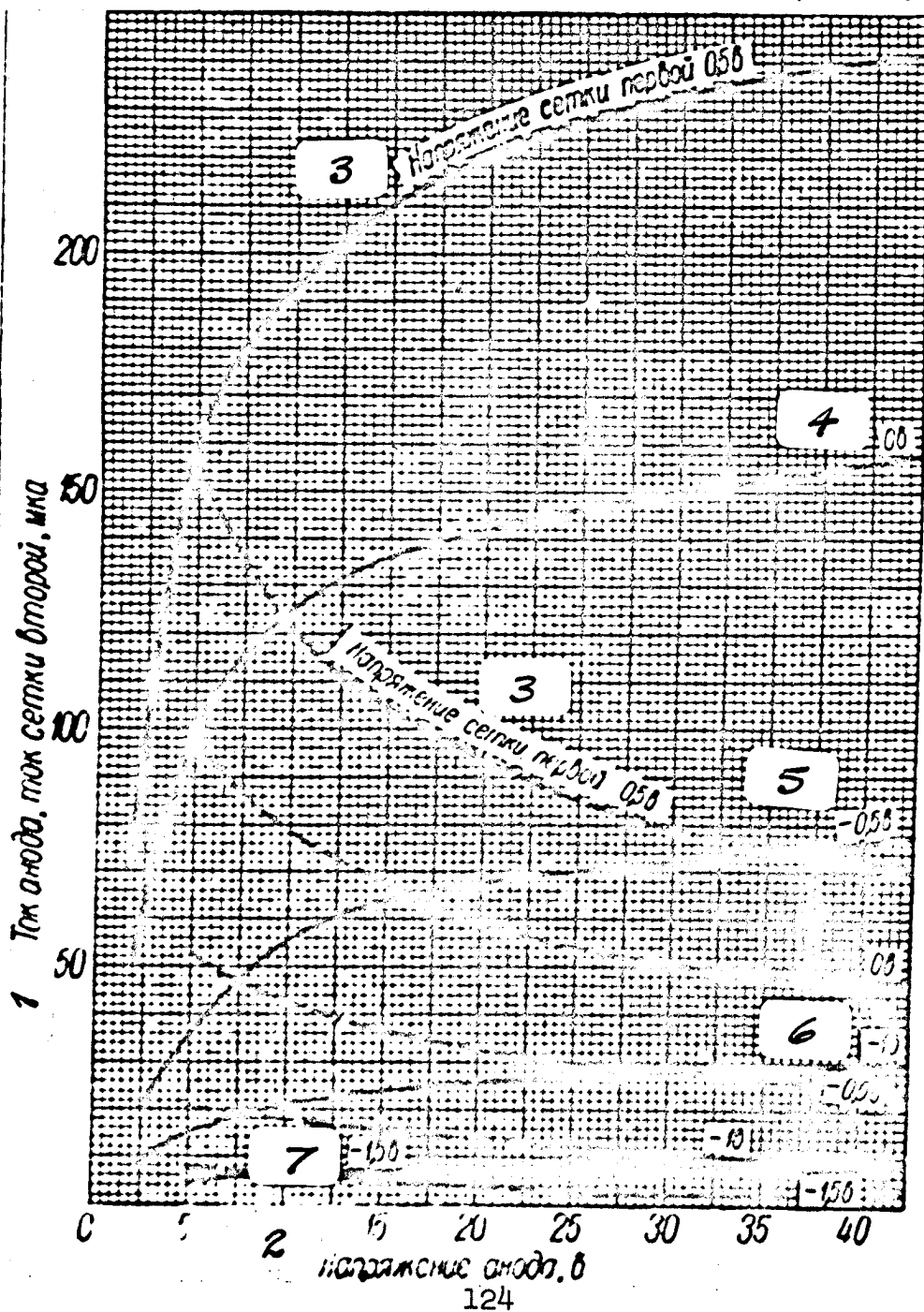
—— Plate.

----- Grid-plate (for screen grid).

Filament voltage 0.625 v.

Screen voltage 30 v.

- 1) Plate current, screen current, μa ; 2) plate voltage, v;
 3) grid voltage 0.5 v; 4) 0 v; 5) -0.5 v; 6) -1 v; 7) -1.5 v.



PENTODE

06P2B

* * * *

Averaged Characteristic Curves

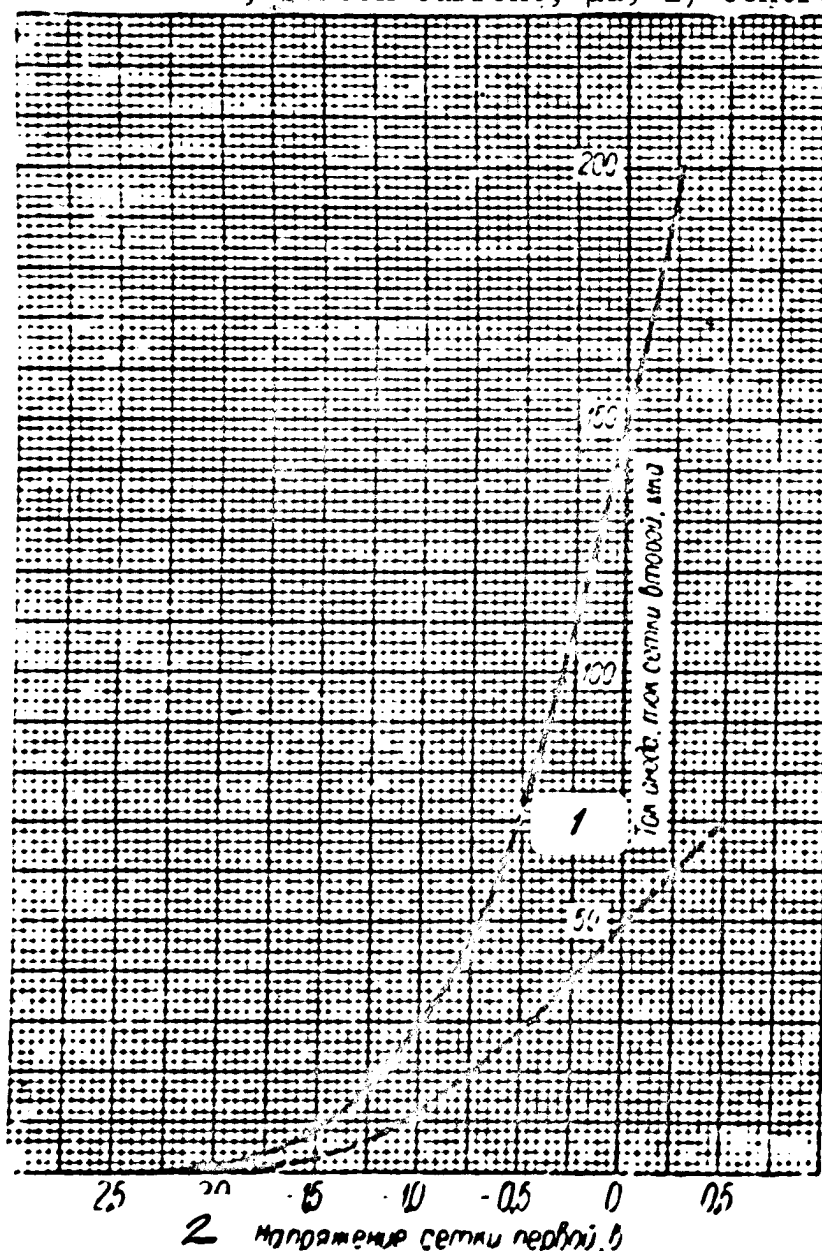
—— Plate-grid.

----- Grid (for screen grid).

Filament voltage 0.625 v.

Plate voltage 30 v.

Screen voltage 30 v.

1) Plate current, screen current, μA ; 2) control-grid voltage, v.

(Above material published April 1959, PKB, G-2)

HEPTODE-CONVERTER

1A1P

* * * * *

Basic function — frequency conversion.

Structure — glass miniature.

General Data

Cathode — oxide-coated filament

Maximum height

60 mm ←

Maximum diameter

19 mm

Number of pins

7

Dimension drawing — 5P.

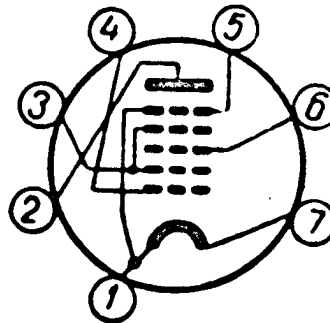
Connection circuit for electrodes and pins

1 — катод (минус
нити накала)
и сетка пятая

2 — анод

3 — сетки вторая и
четвертая

4 — сетка первая



5 — сетка пятая
и катод

6 — сетка третья

7 — катод (плюс ни-
ти накала)

1) Cathode (minus filament) and fifth grid; 2) plate; 3) second and fourth grids; 4) first grid; 5) fifth grid and cathode; 6) third grid; 7) cathode (plus side of filament).

Electrical Data

Filament voltage (=)

1.2 v

Filament current

 60 ± 7 ma

Plate voltage (=)

90 v

Second and fourth grid voltage (=)

45 v

Third grid voltage (=)

0 v

Plate current*

 0.64 ± 0.3 ma

Cathode current*

 $2.48^{+0.97}_{-0.95}$ ma

Conversion transconductance*

0.25 ma/v

Conversion transconductance for 0.95 v filament voltage*

no less than 0.13 ma/v
no less than 0.825 ma/v

Heterodyne transconductance**

*In dynamic operation. The oscillator section of the tube operates in a Hartley circuit with a grid-circuit resistance of 0.1 megohm.

**For a plate voltage of 45 v and a grid voltage of 0 v.

← Change introduced

(Above material published April 1959, PKB, Sheet 1)

HEPTODE-CONVERTER

1A1P

* * * * *

First-grid current*, **	no less than 80 μ a
Third-grid back current*, ***	no more than 0.6 μ a
Service life	1000 hours
Service-life criteria:	
conversion transconductance*	no less than 0.125 ma/v
first-grid current*, **	no less than 64 μ a

*Under dynamic conditions. The oscillator section of the tube operates in a Hartley circuit with a first-grid circuit resistance of 0.1 megohm.

**With a filament voltage of 0.95 v.

***With a third-grid voltage of -1 v.

Interelectrode Capacitances

Input	7 $\pm$ 1.4 μ f
Output	7 $\pm$ 1.8 μ f
Transfer	no more than 0.4 μ f

Maximum Permissible Operating Data

Maximum filament voltage (=)	1.4 v
Minimum filament voltage (=)	0.95 v
Maximum plate voltage (=)	100 v
Maximum second and fourth grid voltages (=)	75 v
Maximum third grid voltage (=)	0 v
Maximum cathode current	6.5 ma
Maximum resistance in third-grid circuit	1.0 megohm

(Above material published April 1959, PKB, Sheet 1)

HEPTODE-CONVERTER

1A1P

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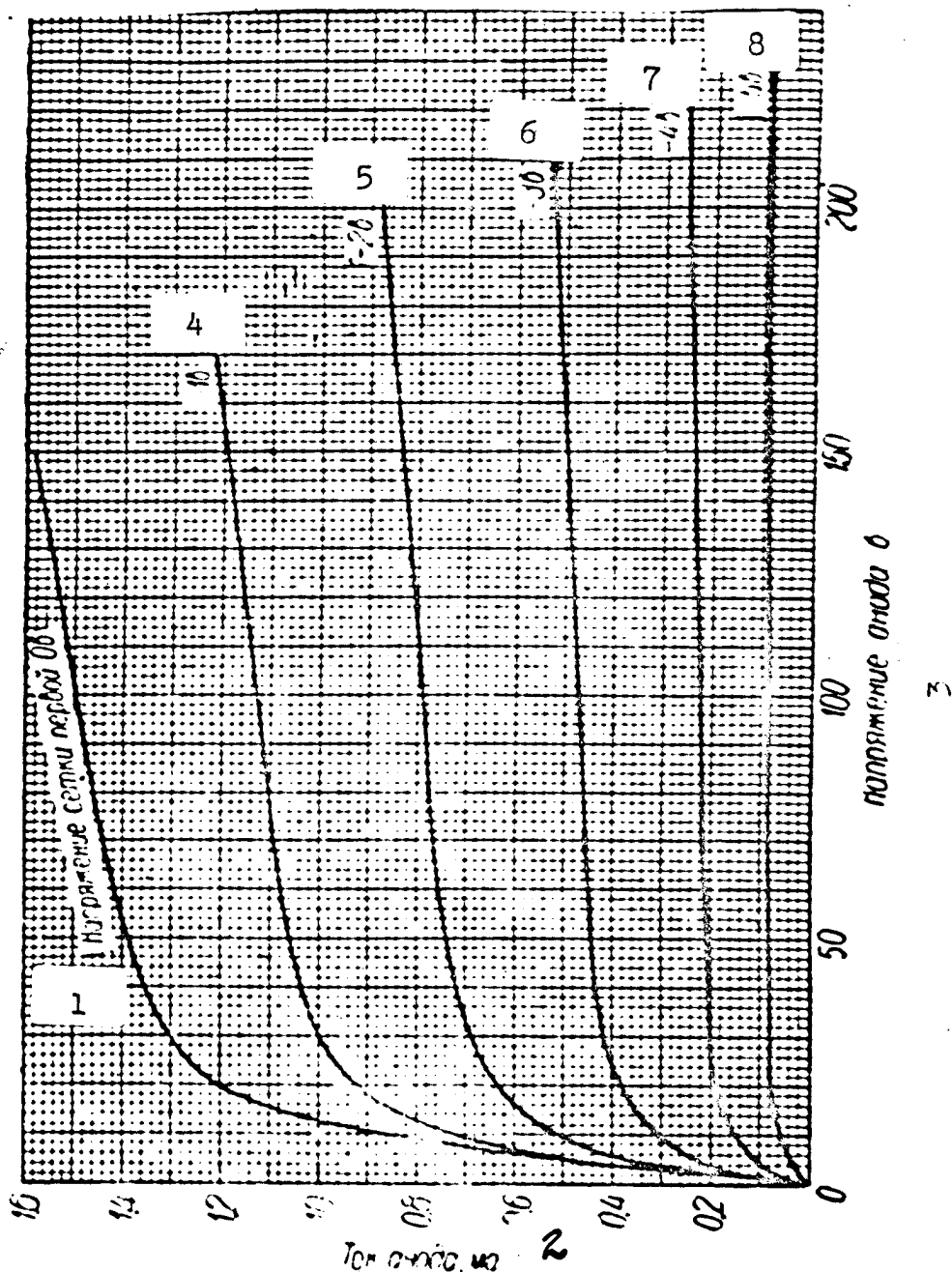
Averaged Plate Characteristics

Filament voltage 1.2 v.

Second-grid voltage 45 v.

Third-grid voltage 0 v.

1) First-grid voltage, 0 v; 2) plate current, ma; 3) plate voltage, v; 4) -1 v; 5) -2 v; 6) -3 v; 7) -4 v; 8) -5 v.



(Above material published April 1959, PKB, G-1)

HEPTODE-CONVERTER

1A1P

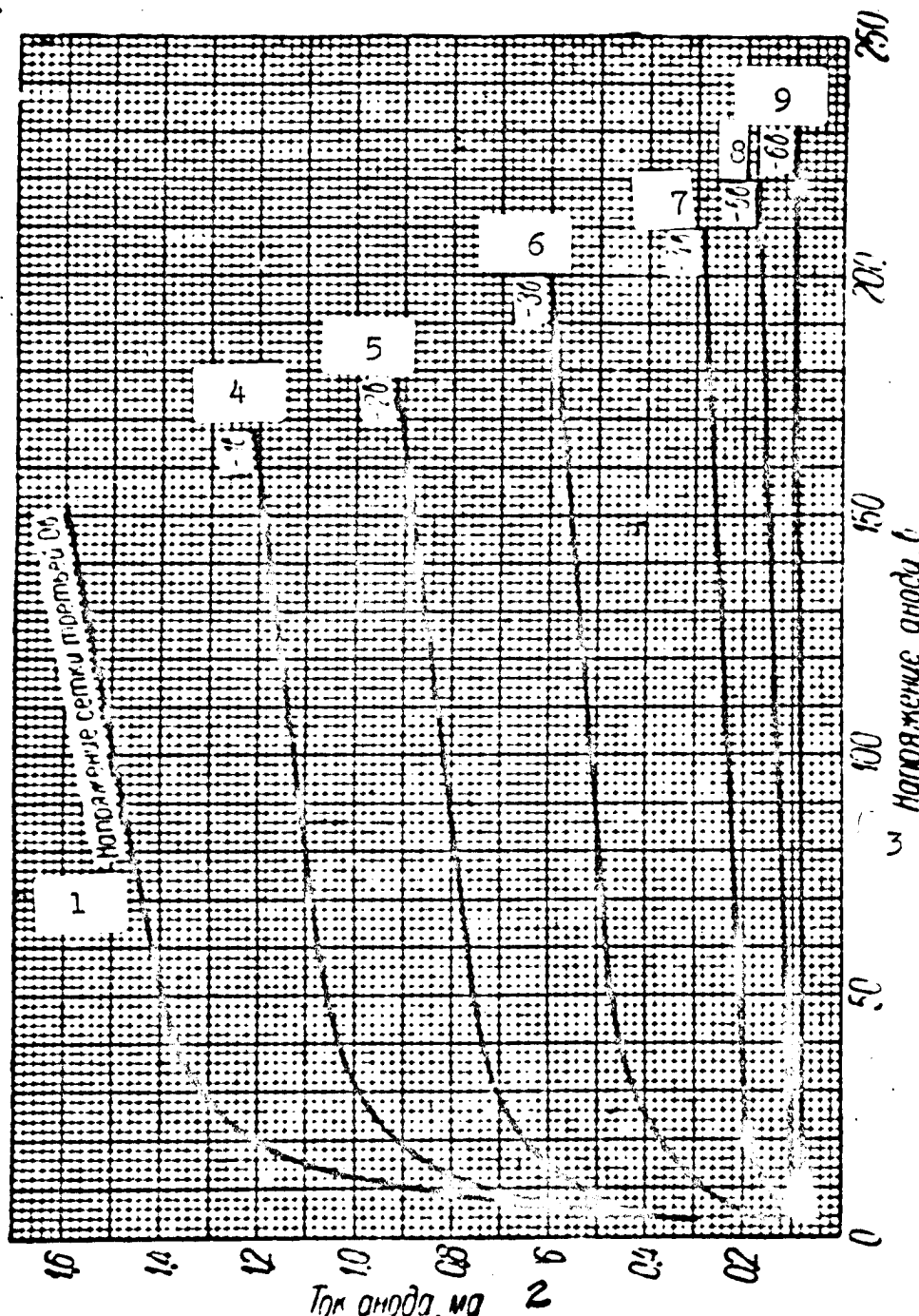
Averaged Plate Characteristics

Filament voltage 1.2 v.

Second-grid voltage 45 v.

First-grid voltage 0 v.

1) First-grid voltage, 0 v; 2) plate current, ma; 3) plate voltage, v; 4) -1 v; 5) -2 v; 6) -3 v; 7) -4 v; 8) -5 v; 9) -6 v.



(Above material published April 1959, PKB, G-2)

HEPTODE-CONVERTER

1A1P

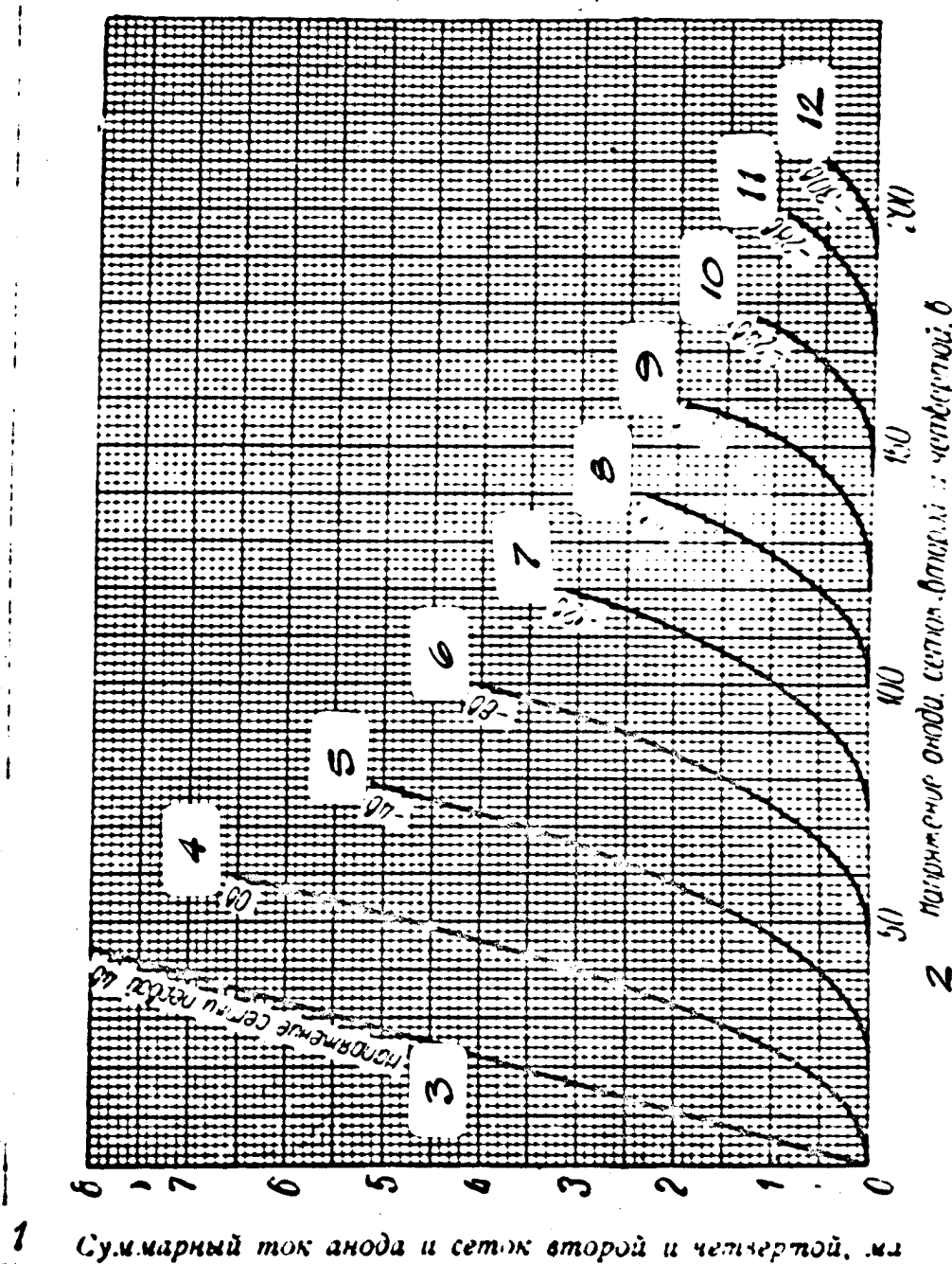
Averaged Plate Characteristics in Oscillation

(Second and fourth grids connected to plate).

Filament voltage 1.2 v.

Third-grid voltage 0 v.

- 1) Total current for plate and second and fourth grids, ma;
 2) plate, second- and fourth-grid voltage, v; 3) first-grid voltage, 4 v; 4) 0 v; 5) -4 v; 6) -8 v; 7) -12 v; 8) -16 v; 9) -20 v; 10) -24 v; 11) -28 v; 12) -30 v.



HEPTODE-CONVERTER

1A1P

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Averaged Oscillation Characteristics

(Second and fourth grids connected to plate).

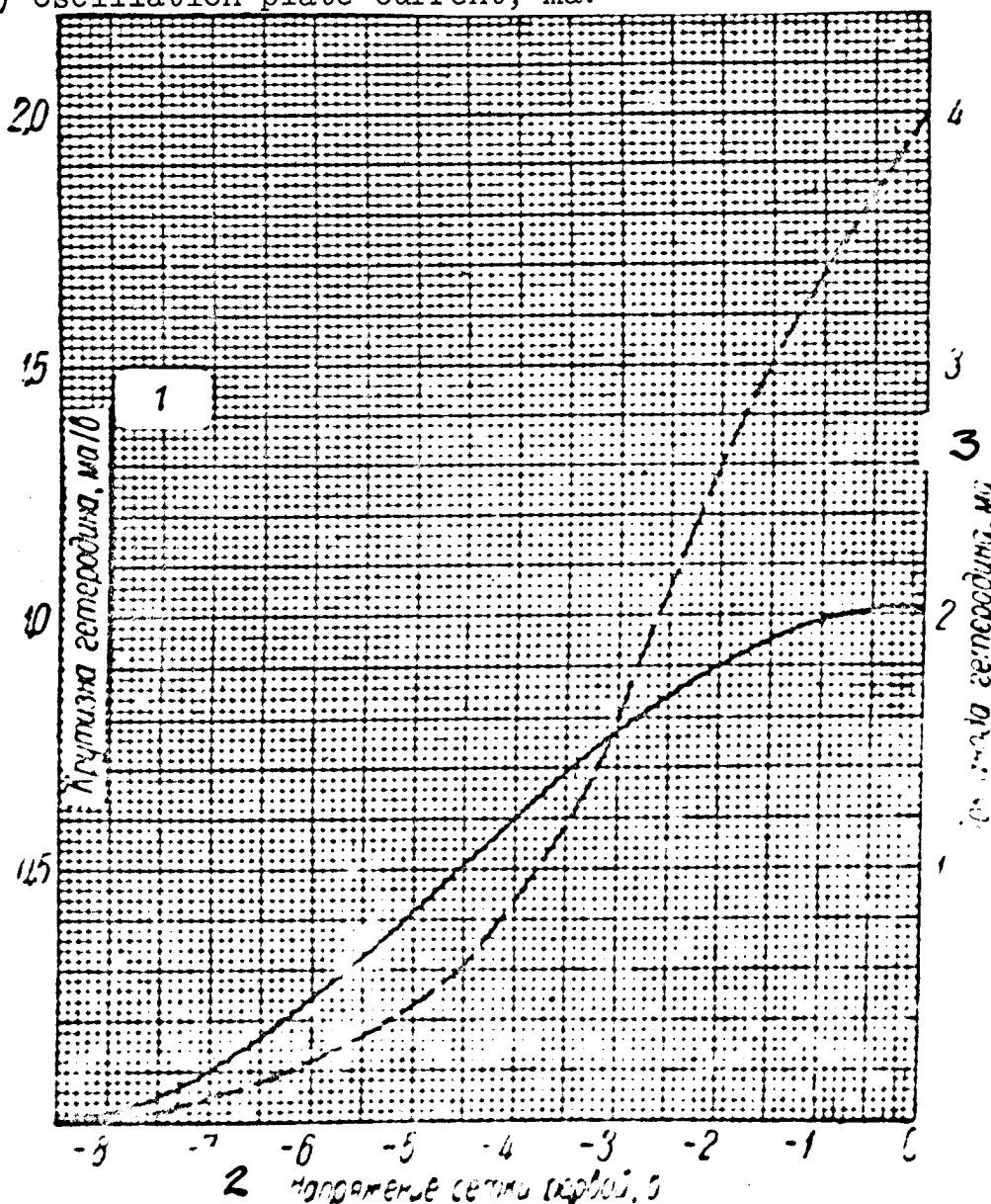
— Transconductance.

----- Plate-grid.

Filament voltage 1.2 v.

Plate and second-grid voltage 45 v.

- 1) Oscillation transconductance, ma/v; 2) first-grid voltage, v;
 3) oscillation plate current, ma.



(Above material published April 1959, PKB, G-4)

HEPTODE-CONVERTER

1A1P

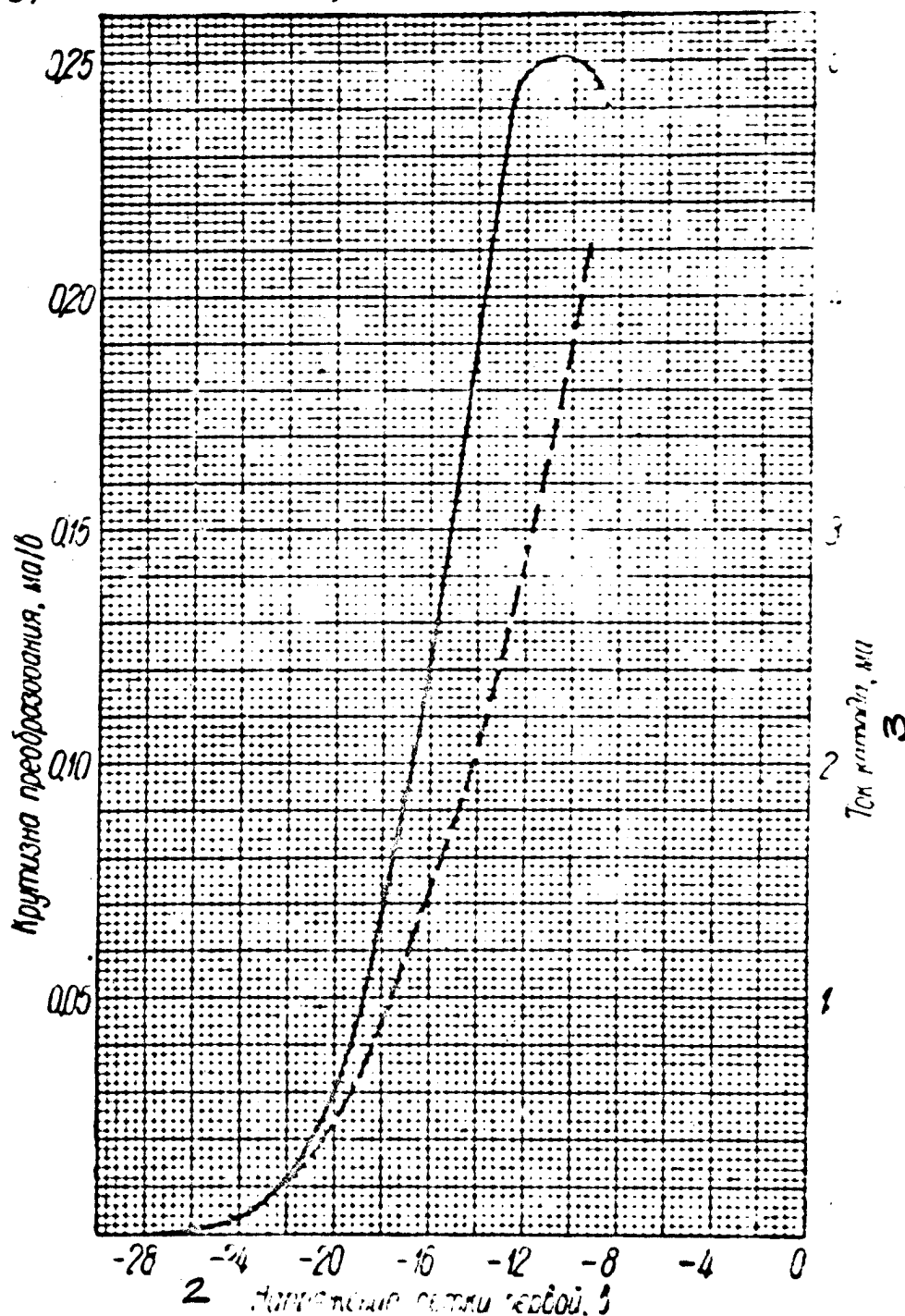
Averaged Dynamic Characteristics

—— Conversion transconductance.

----- Cathode-grid.

Filament voltage, 1.2 v; second-grid voltage, 45 v; plate voltage, 90 v; third-grid voltage, 0 v; first-grid voltage, 14 v (eff).

1) Conversion transconductance, ma/v; 2) first-grid voltage, v; 3) cathode current, ma.



HEPTODE-CONVERTER

1A1P

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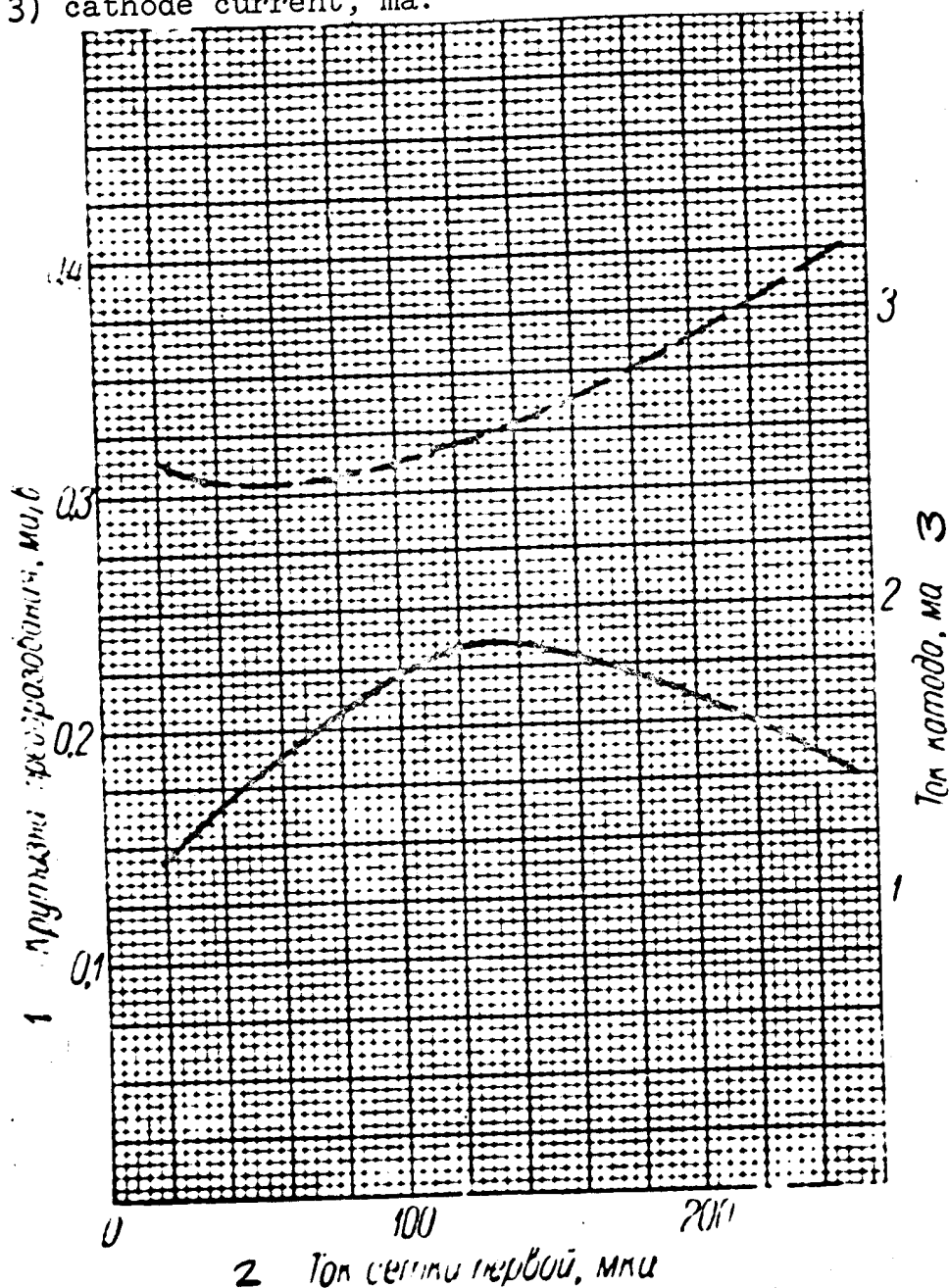
Averaged Characteristics

—— Conversion transconductance.

----- Cathode-grid.

Filament voltage, 1.2 v; third-grid voltage, 0 v; plate voltage, 90 v; second-grid voltage, 45 v; leakage resistance, 0.1 megohm.

1) Conversion transconductance, ma/v; 2) first-grid current, μ a; 3) cathode current, ma.



HEPTODE-CONVERTER

1A2P

* * * * *

Basic function — frequency conversion.

Structure — glass miniature.

General Data

Cathode — oxide-coated filament type

Maximum height

60 mm ←

Maximum diameter

19 mm

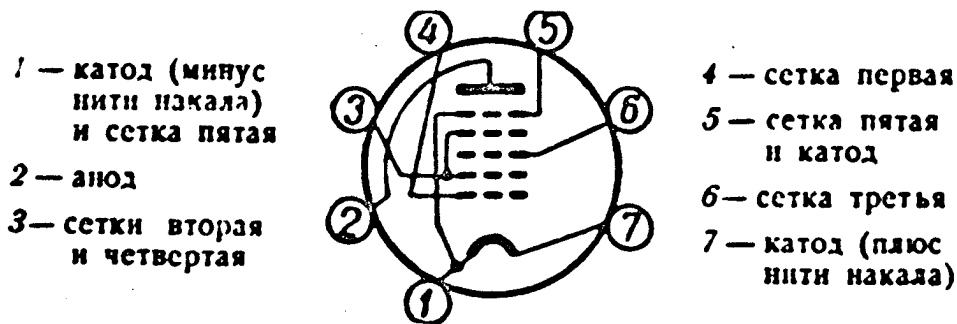
Weight

about 10 grams

Number of pins

7

Dimension drawing — 5P.

Connection diagram for electrodes and pins

1) Cathode (negative side of filament) and fifth grid; 2) plate; 3) second and fourth grids; 4) first grid; 5) fifth grid and cathode; 6) third grid; 7) cathode (positive side of filament).

Electrical Data

Filament voltage (=)

1.2 v

Filament current

 30 ± 3 ma

Plate voltage (=)

60 v

First-grid alternating voltage

8 v (eff)

Second and fourth grid voltages (=)

45 v

Third-grid voltage (=)

0 v

First-grid leakage resistance

51 kohm

Plate current*

 0.7 ± 0.3 ma

Second and fourth grid currents*

 1.1 ± 0.5 ma

First-grid current*

 $115_{-35} \mu\text{a} \leftarrow$

*Under dynamic conditions. The oscillator section of the tube operates with independent excitation at 50 cps. The leakage resistance is 50 kohm, the leakage capacitance 4 μf .

← Change introduced

(Above material published April 1959, PKB, Sheet 1)

HEPTODE-CONVERTER

1A2P

* * * * *

→ Conversion transconductance*, **	0.25-0.07 ma/v
→ Conversion transconductance with filament voltage of 0.95 v*, **	no less than 0.12 ma/v
Conversion transconductance at beginning of curve***	no less than 5 μ a/v
Heterodyne transconductance****	0.82-0.17 ma/v
Equivalent resistance of tube internal noise under static conditions	about 800 kohms
Resonant frequency	no less than 500 Mc
Maximum oscillation frequency in Lecher circuit	75 Mc
Service life	1000 hours
Service-life criterion: conversion transconductance	no less than 0.1 ma/v

*Under dynamic conditions. The oscillator section of the tube operates with independent excitation at a frequency of 50 cps. The leakage resistance is 50 kohm, the leakage capacitance 4 μ f.

**With an alternating voltage on the third grid of 0.7 v (eff).

***With a third-grid voltage of -8 v.

****With a plate voltage of 45 v and a first-grid voltage of 0 v.

Interelectrode Capacitances

Input	5.1 μ f
Output	6.3 μ f
Transfer	no more than 0.6 μ f
First grid-third grid	0.14 μ f
Oscillator-section input	0.95 μ f
Oscillator-section output	7.3 μ f

Maximum Permissible Operating Data

Maximum filament voltage (=)	1.4 v
Minimum filament voltage (=)	0.9 v
Maximum power-supply voltage for plate, second-, and fourth-grid circuits (=)	250 v
Maximum plate voltage (=)	90 v
Maximum second- and fourth-grid voltages (=)	75 v
Maximum cathode current (mean value)	3 ma
Maximum cathode peak current	9 ma
Maximum plate dissipation	0.3 watt
Maximum resistance in third-grid circuit	1 megohm

→ Change introduced

(Above material published April 1959, PKB, Sheet 1)

HEPTODE-CONVERTER

1A1P

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Averaged Characteristics

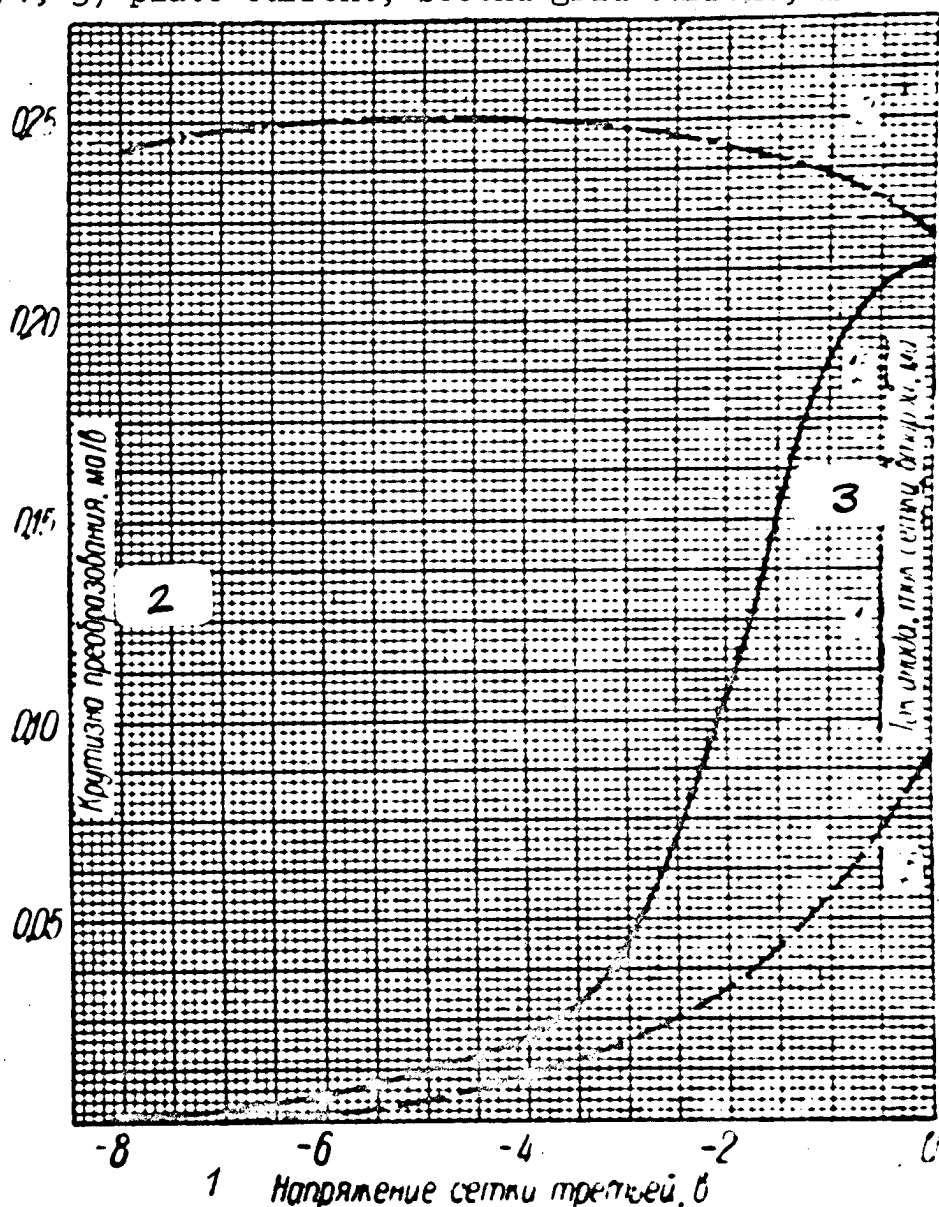
—— Conversion transconductance.

----- Plate-grid.

- . - Grid (for second grid).

Filament voltage, 1.2 v; first-grid current, 125 μ a; plate voltage, 90 v; leakage resistance, 0.1 megohm; second-grid voltage, 45 v.

1) Third-grid voltage, v; 2) conversion transconductance, ma/v; 3) plate current, second-grid current, ma.



(Above material published April 1959, PKB, G-7)

HEPTODE-CONVERTER

1A2P

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Averaged Characteristics

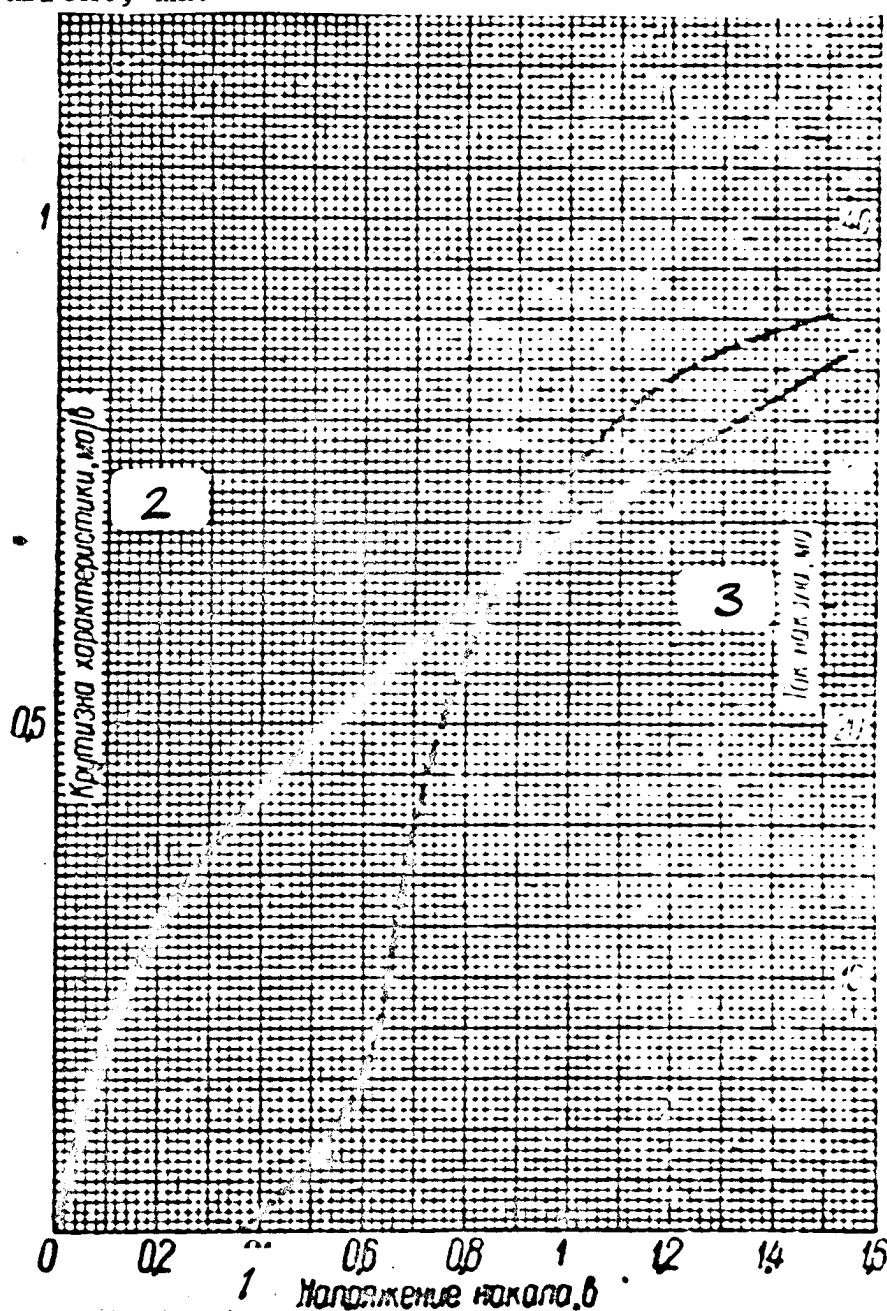
—— Filament

----- Oscillator transconductance as a function of filament voltage.

Plate, second- and fourth-grid voltages, 45 v.

Third-grid voltage, 0 v.

1) Filament voltage, v; 2) transconductance, ma/v; 3) filament current, ma.



HEPTODE-CONVERTER

1A2P

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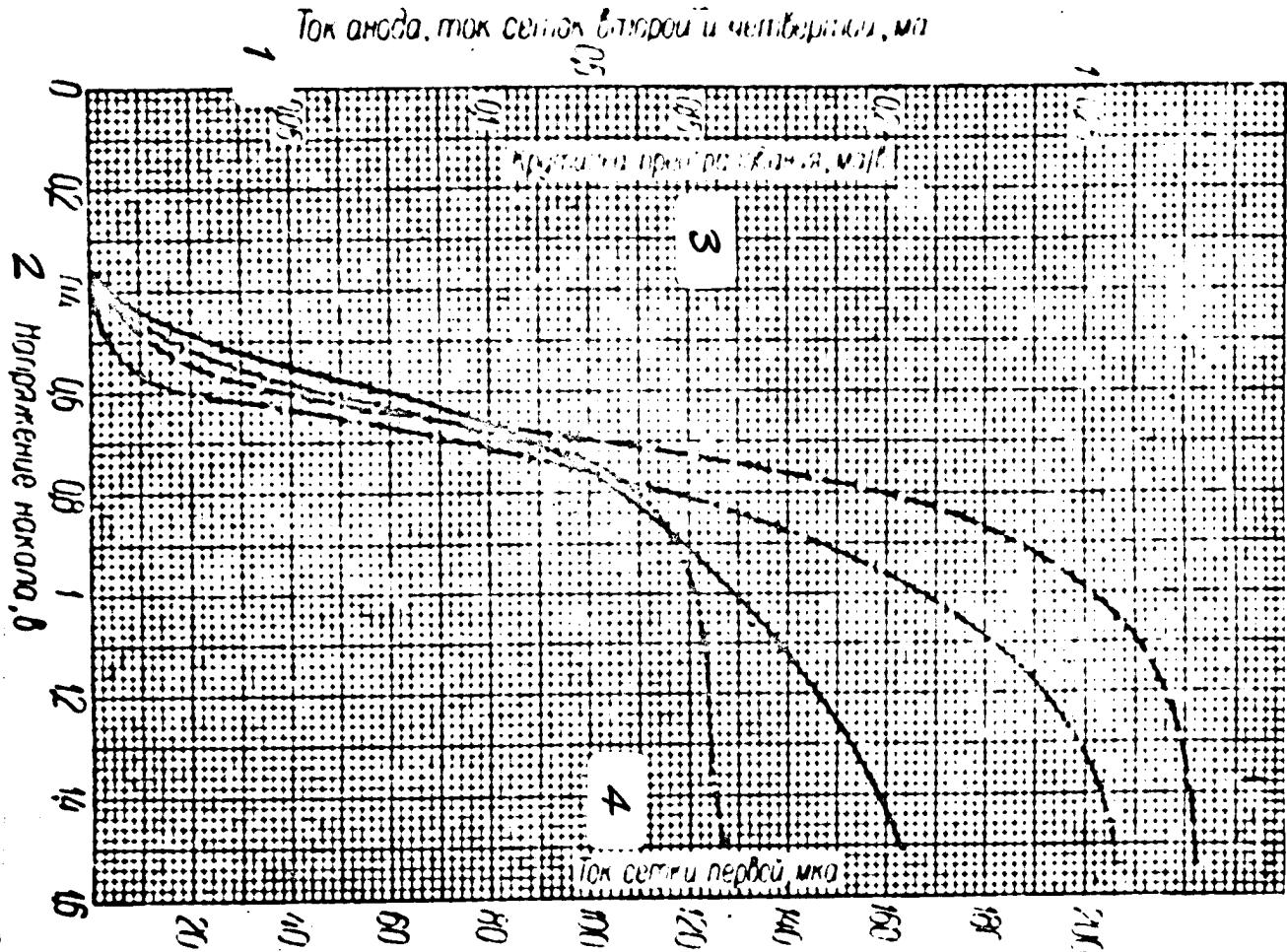
Averaged Characteristics

(As functions of filament voltage)

— Plate current; -·-·-·- first-grid current; ----- second- and fourth-grid currents; -'-'- conversion transconductance.

Plate voltage, 60 v; alternating first-grid voltage, 8 v (eff); second- and fourth-grid voltages, 45 v; third-grid voltage, 0 v; resistance in first-grid circuit, 51 kohm.

- 1) Plate current, second- and fourth-grid currents, ma; 2) filament voltage, v; 3) conversion transconductance, ma/v; 4) first-grid current, μ a.



(Above material published April 1959, PKB, G-2)

HEPTODE-CONVERTER

1A2P

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Averaged Characteristics

—— Plate.

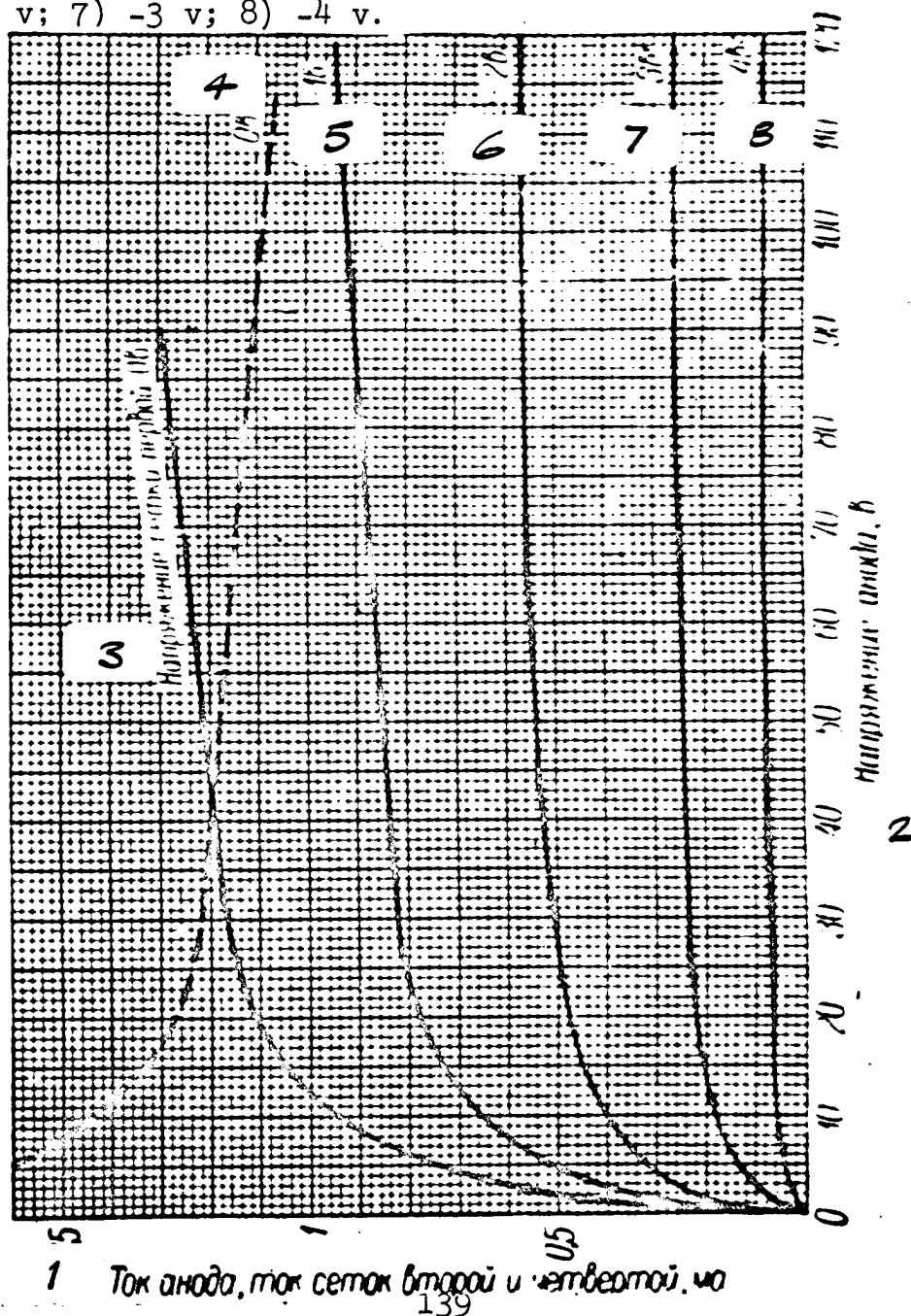
----- Grid-plate (for second and fourth grids).

Filament voltage, 1.2 v.

Second- and fourth-grid voltages, 45 v.

Third-grid voltage, 0 v.

1) Plate current, second- and fourth-grid currents, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) 0 v; 5) -1 v; 6) -2 v; 7) -3 v; 8) -4 v.



HEPTODE-CONVERTER

1A2P

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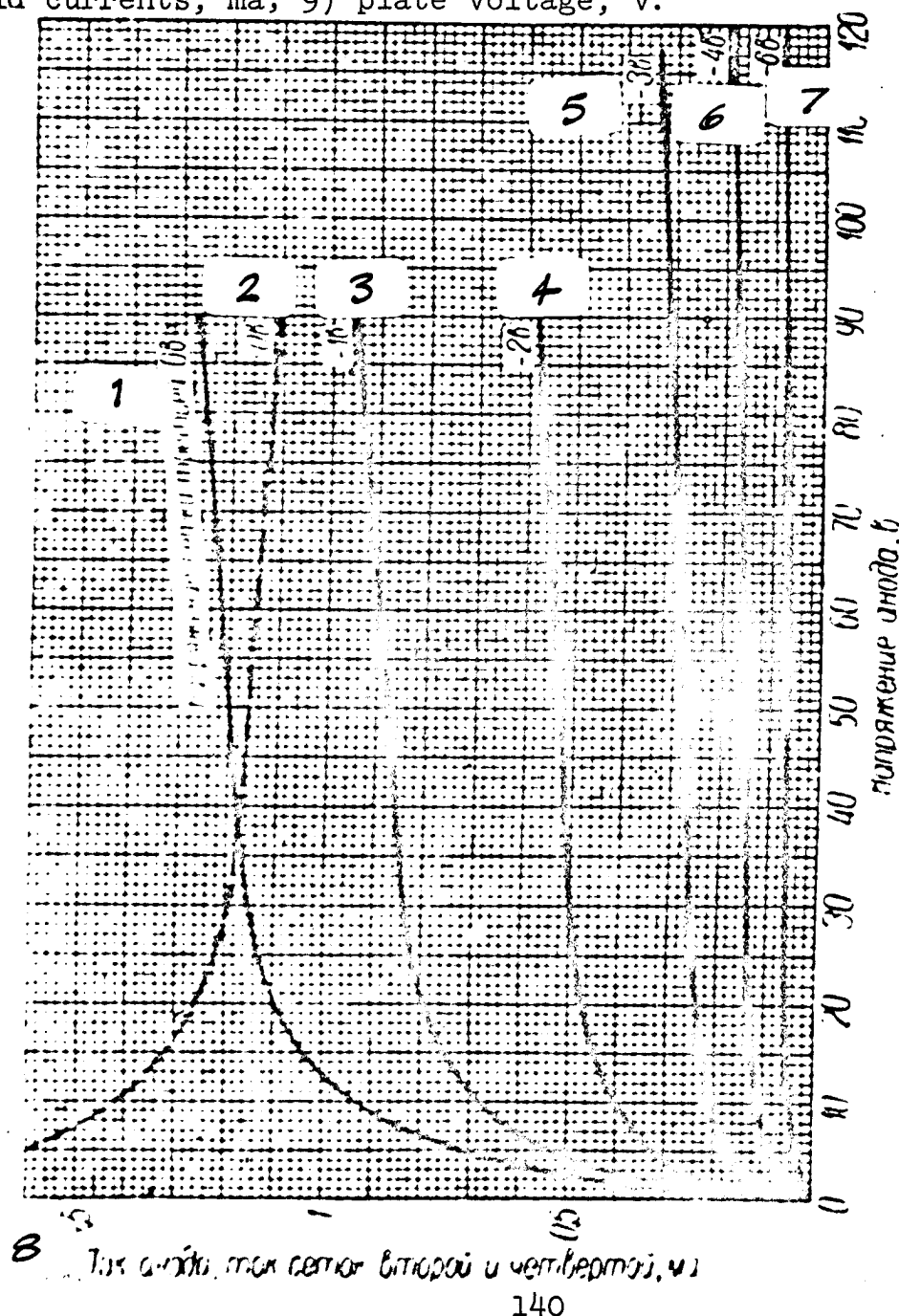
Averaged Characteristics

—— Plate.

----- Grid-plate (for second and fourth grids).

Filament voltage, 1.2 v; second- and fourth-grid voltages, 45 v; first-grid voltage, 0 v.

1) First-grid voltage, 0 v; 2) 0 v; 3) -1 v; 4) -2 v; 5) -3 v; 6) -4 v; 7) -6 v; 8) plate current, second- and fourth-grid currents, ma; 9) plate voltage, v.



HEPTODE-CONVERTER

1A2P

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Averaged Characteristics

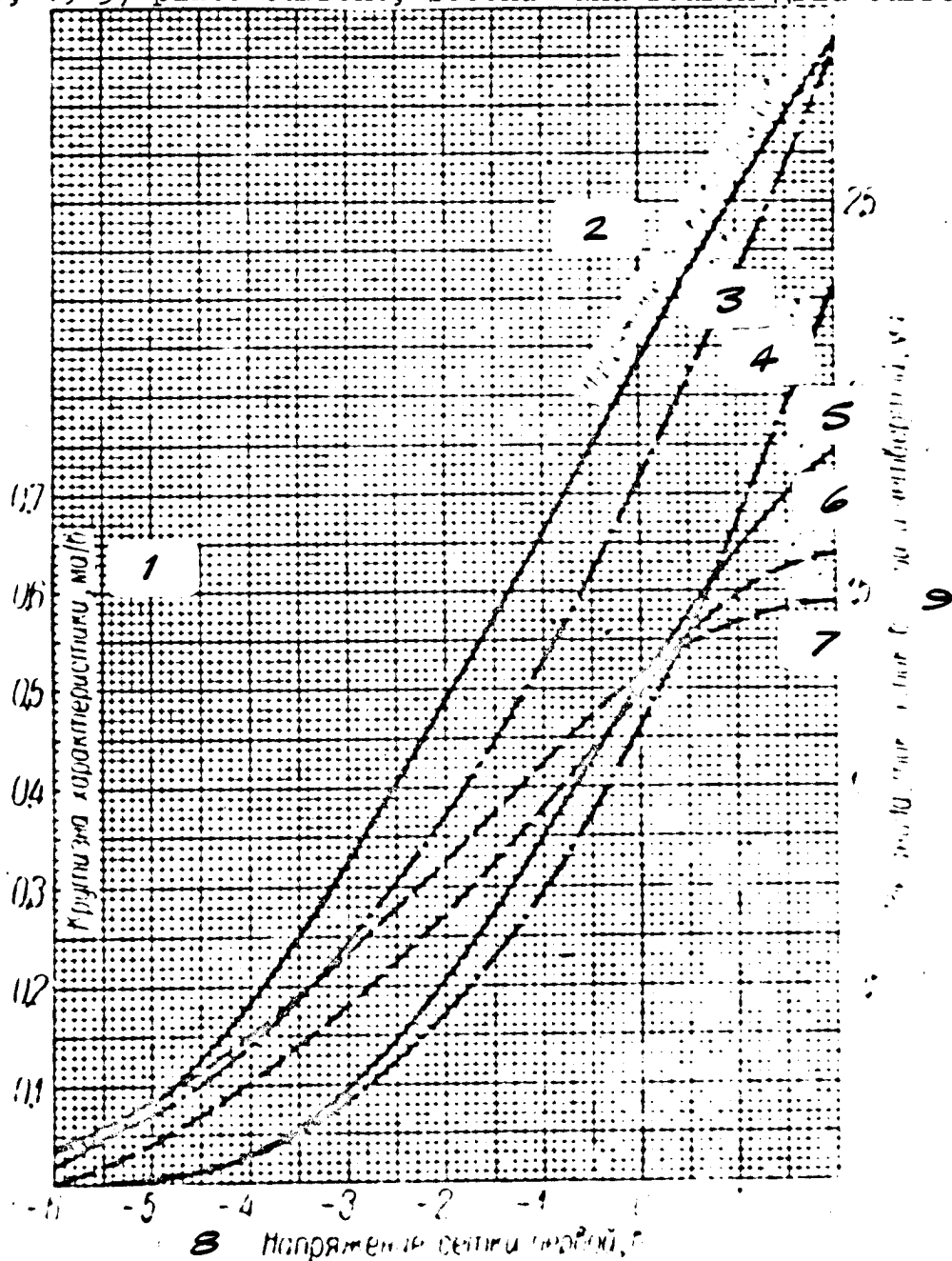
—— Plate-grid.

- - - - Grid (for second and fourth grids).

----- Transconductance.

Filament voltage, 1.2 v; plate voltage, 60 v; third-grid voltage, 0 v.

1) Slope of curves, ma/v; 2) second-grid voltage, 60 v; 3) 60 v; 4) 45 v; 5) 45 v; 6) 45 v; 7) 60 v; 8) first-grid voltage, v; 9) plate current, second- and fourth-grid currents, ma.



HEPTODE-CONVERTER

1A2P

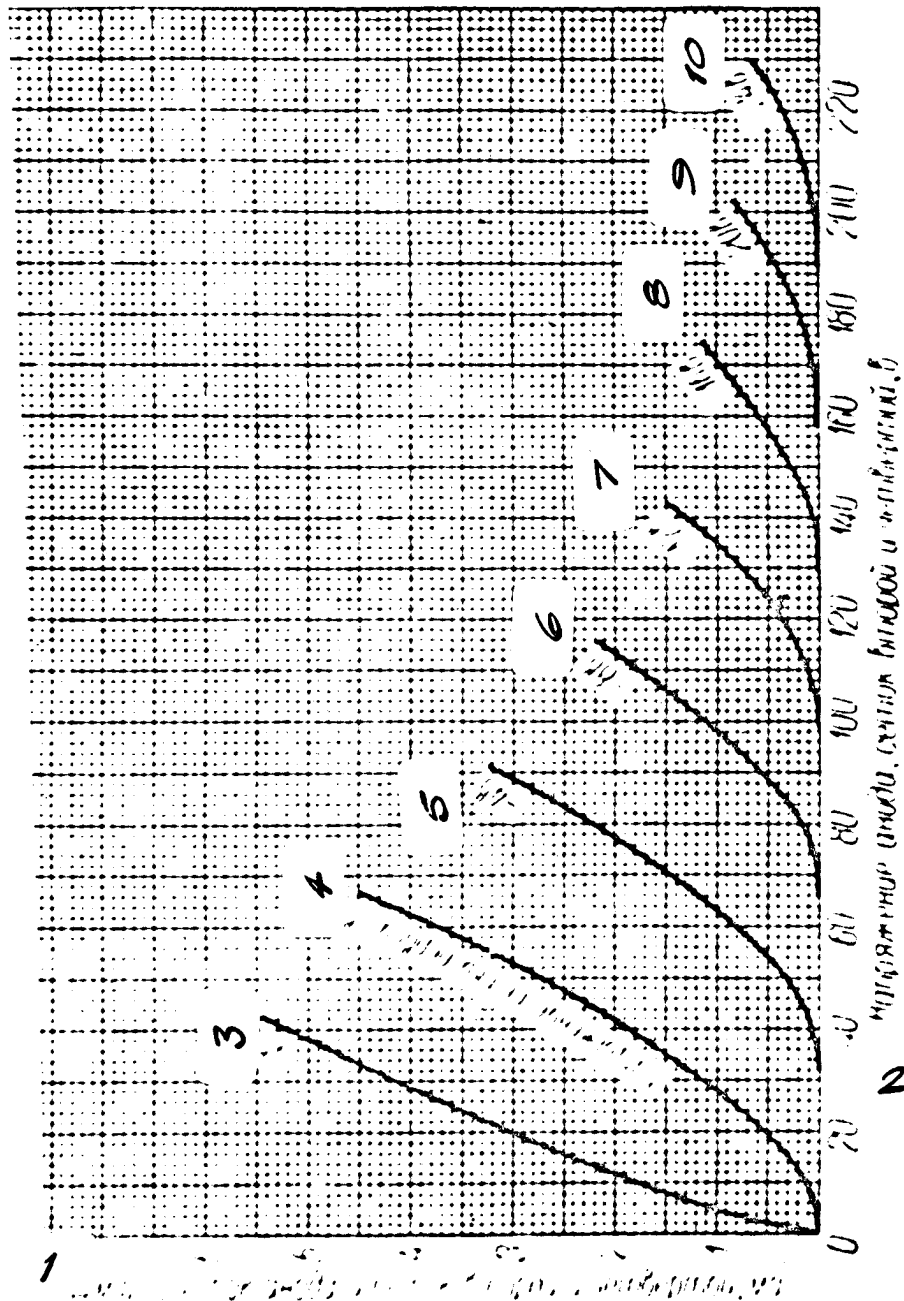
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Averaged Plate Characteristics for Oscillator Section

(Second and fourth grids connected to plate)

Filament voltage, 1.2 v; third-grid voltage, 0 v.

1) Total plate, second-grid and fourth-grid current, ma; 2) plate, second-grid, and fourth-grid voltage, v; 3) 4 v; 4) first-grid voltage, 0 v; 5) -4 v; 6) -8 v; 7) -12 v; 8) -16 v; 9) -20 v; 10) -24 v.



(Above material published April 1959, PKB, G-6)

HEPTODE-CONVERTER

1A2P

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Averaged Characteristics of Oscillator Section

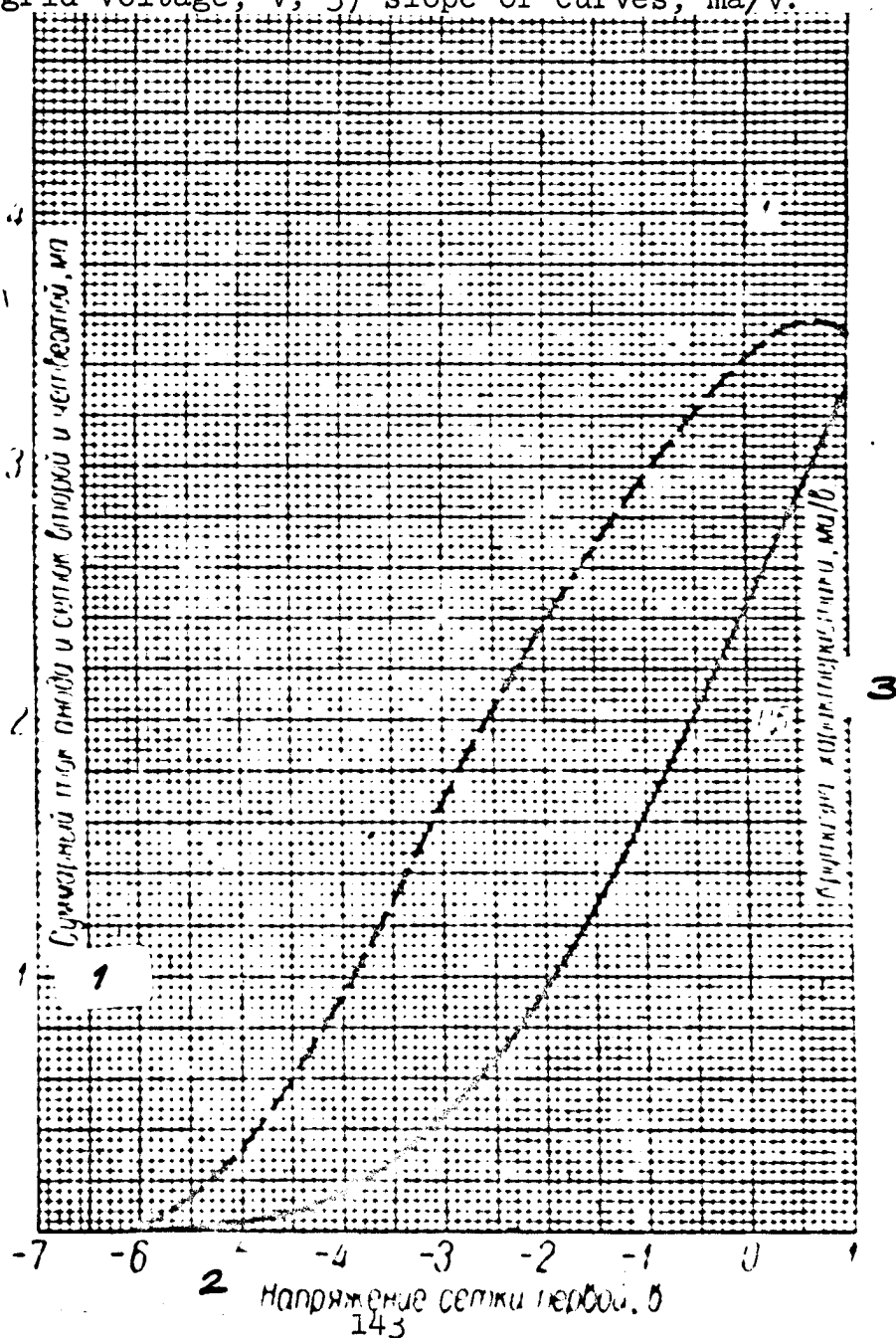
(Second and fourth grids connected to plate)

—— Plate-grid.

----- Transconductance.

Filament voltage, 1.2 v; plate and second- and fourth-grid voltages, 45 v; third-grid voltage, 0 v.

1) Total plate, second-grid and fourth-grid currents, ma; 2) first-grid voltage, v; 3) slope of curves, ma/v.



HEPTODE-CONVERTER

1A2P

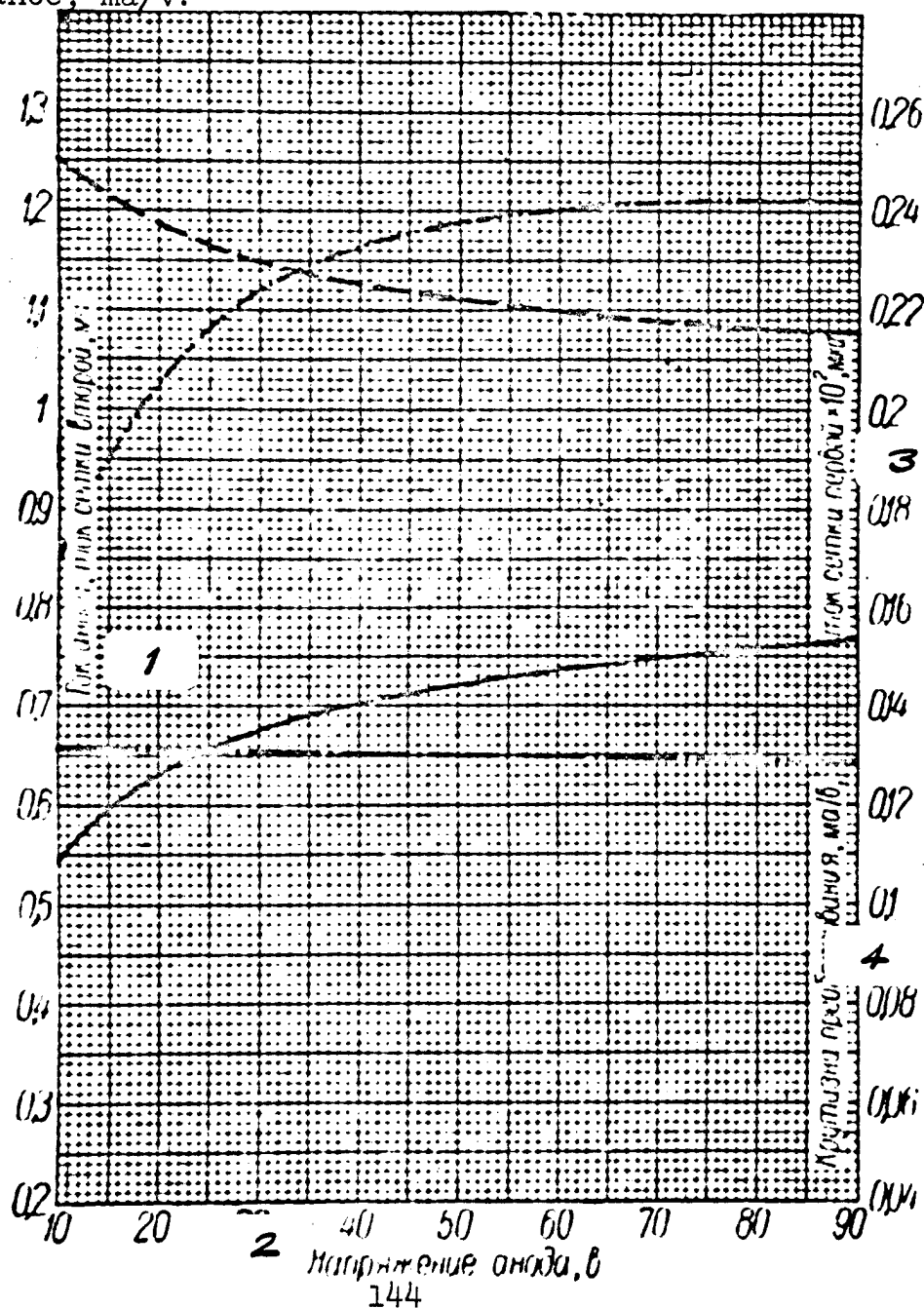
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Averaged Dynamic Characteristics

—— Plate; ----- grid-plate (for second grid); -.-.-.- conversion transconductance; -.-.- grid-plate.

Filament voltage, 1.2 v; second-grid voltage, 45 v; third-grid voltage, 0 v; first-grid alternating voltage, 8 v (eff); resistance in first-grid circuit, 51 kohm.

1) Plate current, second-grid current, ma; 2) plate voltage, v; 3) first-grid current $\times 10^2$, μ a; 4) conversion transconductance, ma/v.



HEPTODE-CONVERTER

1A2P

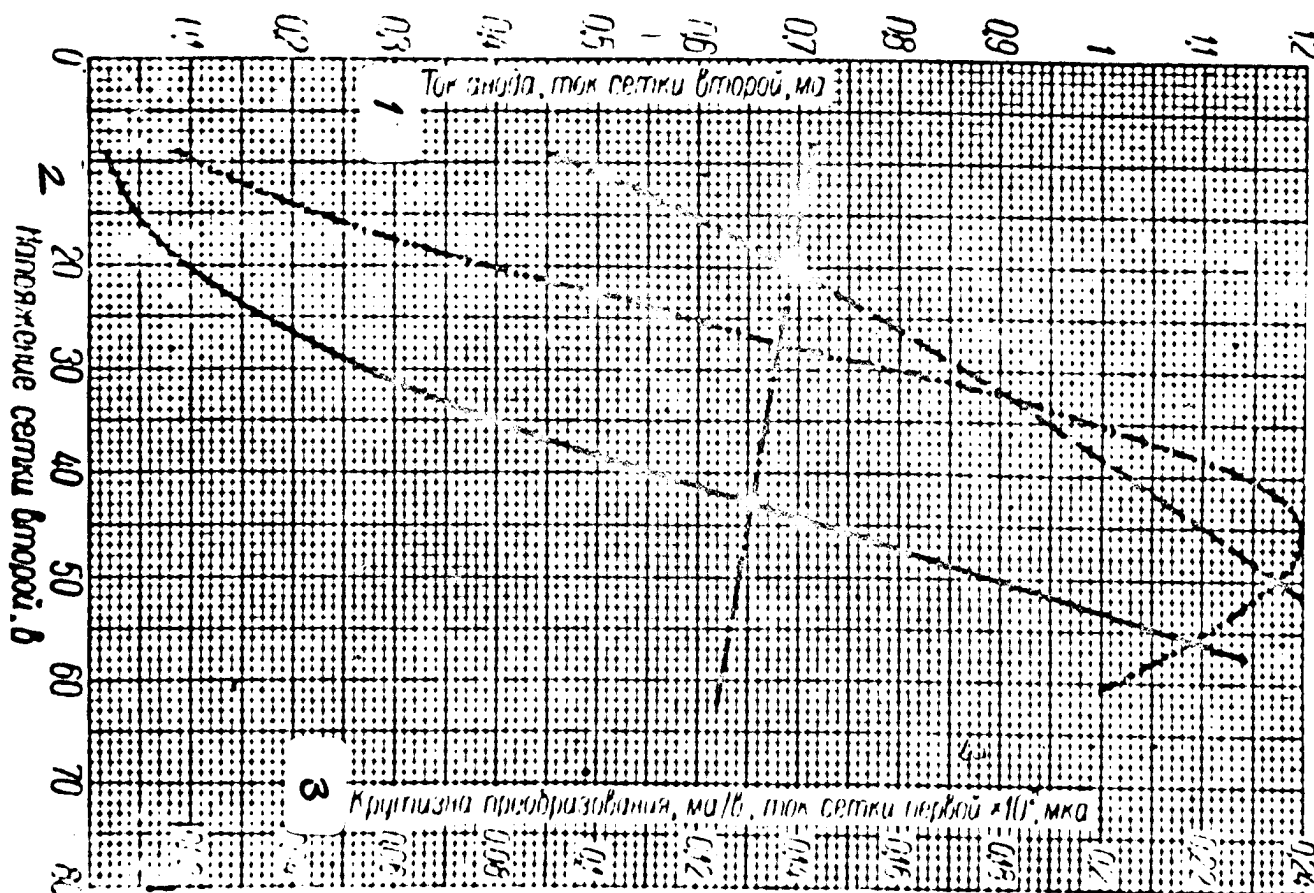
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Averaged Dynamic Characteristics

—— Plate-grid; ----- grid; -.-.- grid (for first grid);
 -.-.-.- conversion transconductance.

Filament voltage, 1.2 v; plate voltage, 60 v; third-grid voltage, 0 v; first-grid alternating voltage, 8 v (eff); resistance in first-grid circuit, 51 kohm.

1) Plate current, second-grid current, ma; 2) second-grid voltage, v; 3) conversion transconductance, ma/v, first-grid current $\times 10^2$, μ a.



(Above material published April 1959, PKB, G-9)

HEPTODE-CONVERTER

1A2P

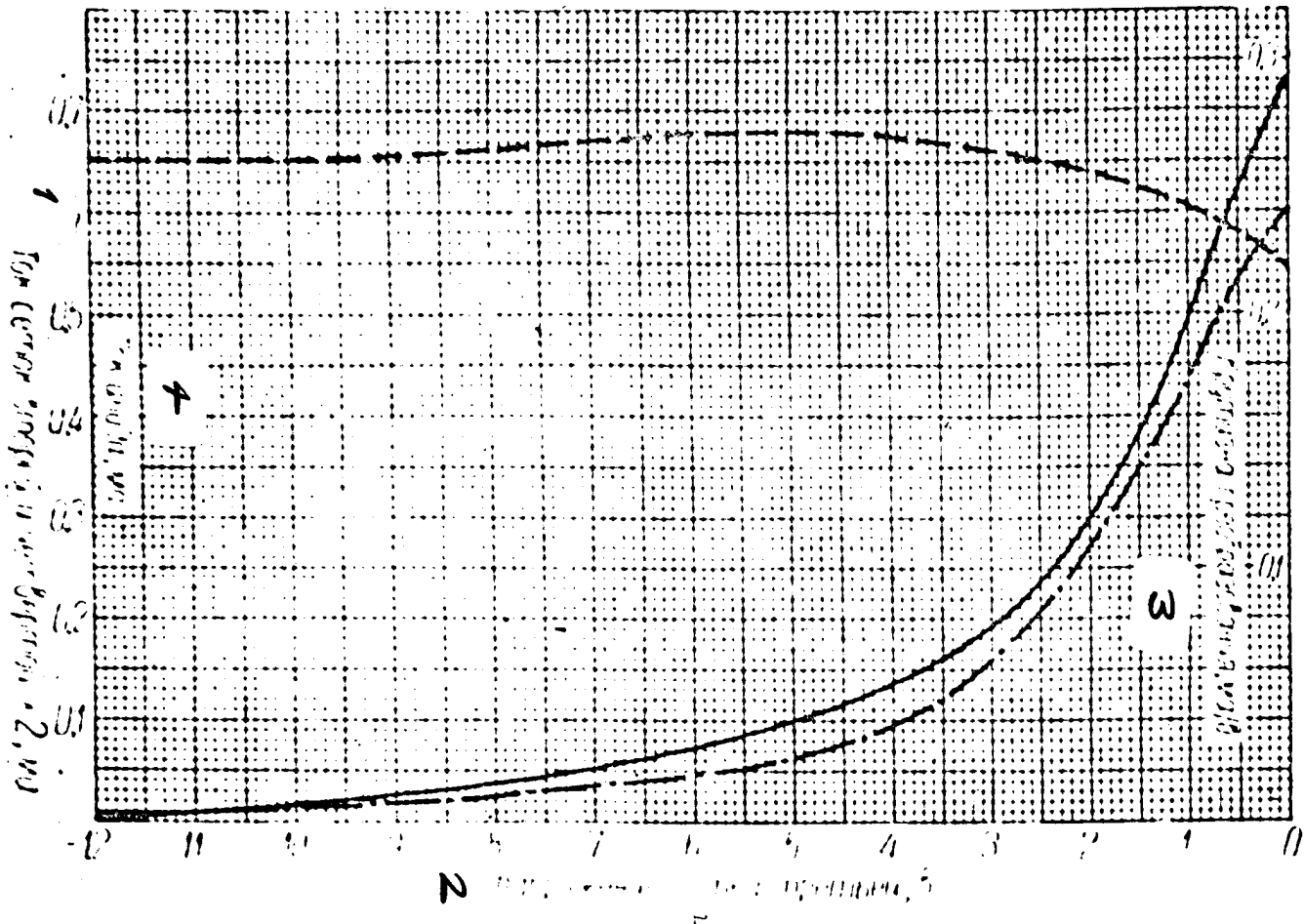
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Averaged Dynamic Characteristics

—— Plate grid; ----- grid (for second and fourth grids);
 - - - - conversion transconductance.

Filament voltage, 1.2 v; plate voltage, 60 v; second- and fourth-grid voltages, 45 v; first-grid alternating voltage, v (eff); resistance in first-grid circuit, 51 kohm.

1) Second and fourth grid currents x 2, ma; 2) third-grid voltage, v; 3) conversion transconductance, ma/v; 4) plate current, ma.



(Above material published April 1959, PKB, G-10)

HEPTODE-CONVERTER

1A2P

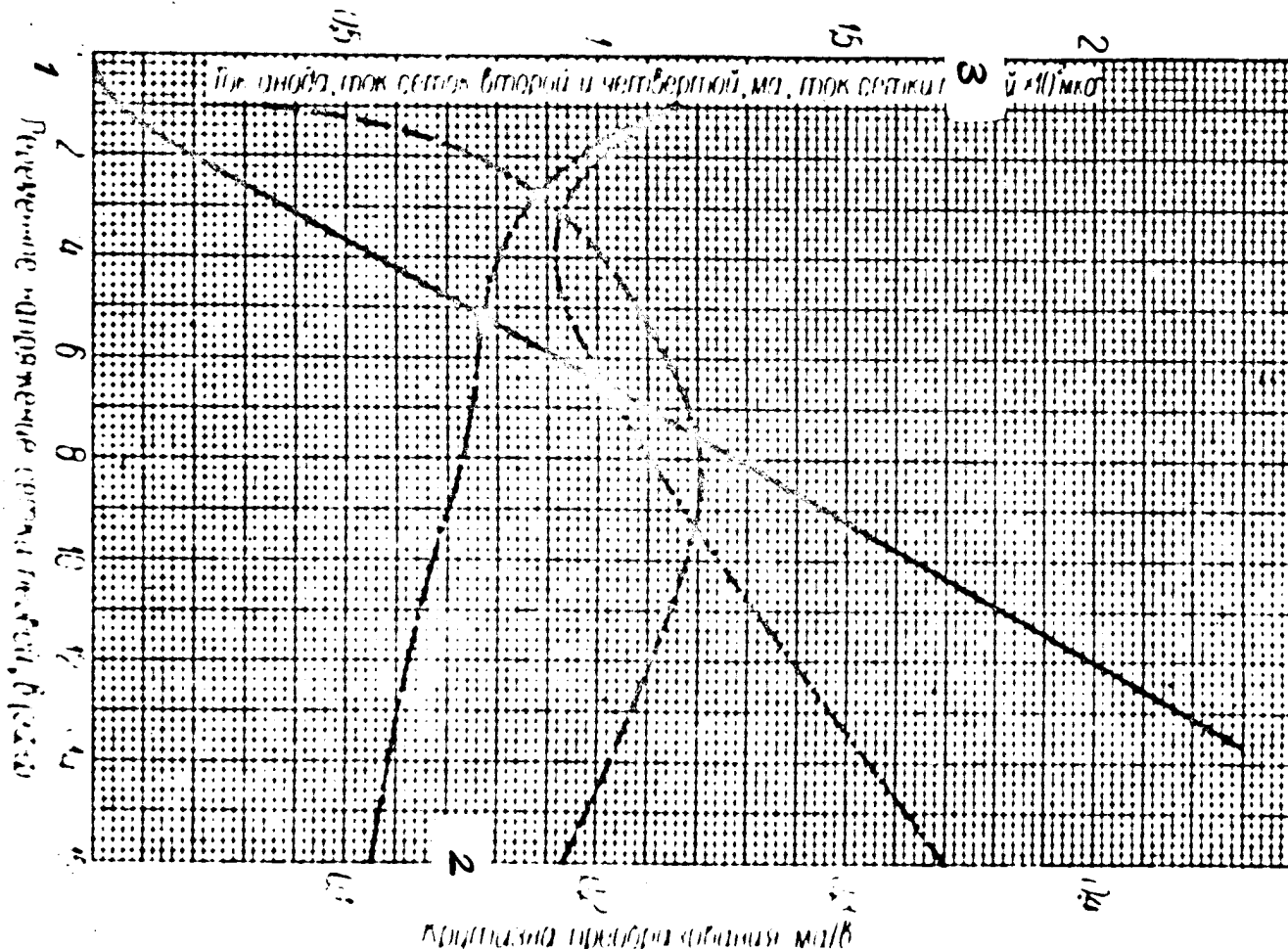
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Averaged Dynamic Characteristics

(As a function of alternating first-grid voltage): - - - - plate current; ——— first-grid current; - · - · - second- and fourth-grid currents; - - - - conversion transconductance.

Filament voltage, 1.2 v; plate voltage, 60 v; second- and fourth-grid voltages, 45 v; resistance in first-grid circuit, 51 kohm.

1) Alternating first-grid voltage, v (eff); 2) conversion transconductance, ma/v; 3) plate current, second- and fourth-grid currents, ma, first-grid current $\times 10^2 \mu\text{a}$.



(Above material published April 1959, PKB, G-11)

HEPTODE-CONVERTER

1A2P

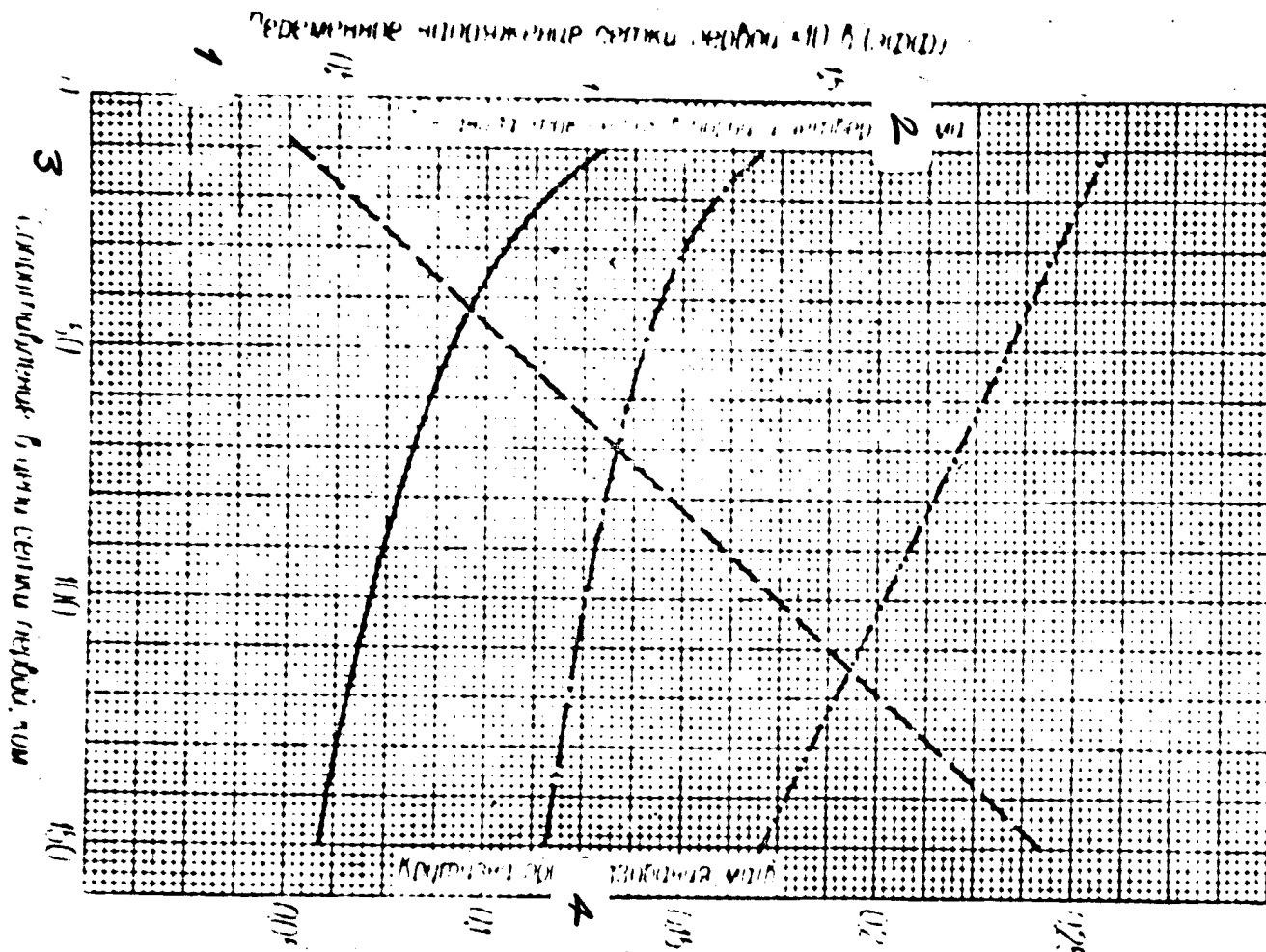
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Averaged Dynamic Characteristics

(As a function of resistance in first-grid circuit): ——— plate current; - - - - second- and fourth-grid currents; - - - - first-grid alternating voltage; - - - - conversion transconductance.

Filament voltage, 1.2 v; plate voltage, 60 v; second- and fourth-grid voltages, 45 v; first-grid current, 130 μ a.

1) First-grid alternating voltage $\times 10$ v (eff); 2) plate current, second- and fourth-grid currents, ma; 3) resistance in first-grid circuit, kohm; 4) conversion transconductance, ma/v.



(Above material published April 1959, PKB, G-12)

DIODE-PENTODE

1B1P

* * * * *

Basic function — detector and audio-frequency voltage preamplifier.

Structure — glass miniature.

Basic Data

Cathode — oxide coated filament-type

Maximum height

60 mm

Maximum diameter

19 mm

Number of pins

7

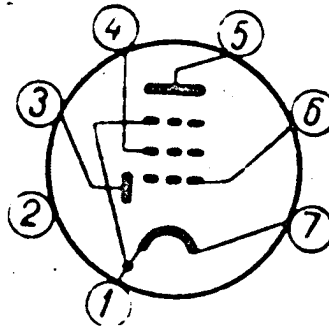
Dimension drawing — 5P

Connection diagram for electrodes and pins

1 — катод (минус
нити накала)
и сетка третья

2 — не подключен

3 — анод диода



4 — сетка вторая

5 — анод пентода

6 — сетка первая

7 — катод (плюс
нити накала)

1) Cathode (negative side of filament) and third grid; 2) not connected; 3) diode plate; 4) screen grid; 5) pentode plate; 6) first grid; 7) cathode (positive side of filament).

Electrical Data

Filament voltage (=)

1.2 v

Filament voltage

60 ± 7 ma

Plate voltage (=)

67.5 v

Screen-grid voltage (=)

67.5 v

First-grid voltage (=)

0 v

Diode current*

no less than 25 μ a

Diode emission current

no less than 0.5 ma

Pentode plate current

1.6 ± 0.55 ma

Screen grid current

0.35 - 0.15 ma

Transconductance

0.625 ± 0.145 ma/v

Transconductance with filament voltage
of 0.95 v

no less than 0.38 ma/v

*Diode plate connected to positive side of filament through 5.1 kohm resistor, filament voltage 1.2 v, voltages on remaining electrodes zero.

← Change introduced

(Above material published April 1959, PKB, Sheet 1)

DIODE-PENTODE

1B1P

* * * * *

First-grid back current*	no more than 0.5 μ a
Output voltage**	no less than 6 v (eff)
Service life	1000 hours
Service-life criteria:	
transconductance	no less than 0.4 ma/v
diode emission current	no less than 0.2 ma

*With 90 v on plate and screen, first-grid voltage of -2 v, and first-grid-circuit resistance of 0.5 megohm.

**With power-supply voltage for plate and grid of 45 v, plate-circuit resistance of 1 megohm, screen-circuit resistance of 3.6 megohm, 0.1 μ f capacitor connected between screen and cathode, and first-grid alternating voltage of 0.2 v (eff).

Maximum Permissible Operating Values

Maximum filament voltage (=)	1.4 v
Minimum filament voltage (=)	0.95 v
Maximum pentode plate voltage (=)	100 v
Maximum screen voltage (=)	75 v
Maximum first-grid voltage (=)	0 v
Maximum cathode current	4 ma
Maximum diode current	250 μ a
Maximum first-grid circuit resistance	1 megohm

→ Change introduced [copy does not show location of change].

(Above material published April 1959, PKB, Sheet 1)

DIODE-PENTODE

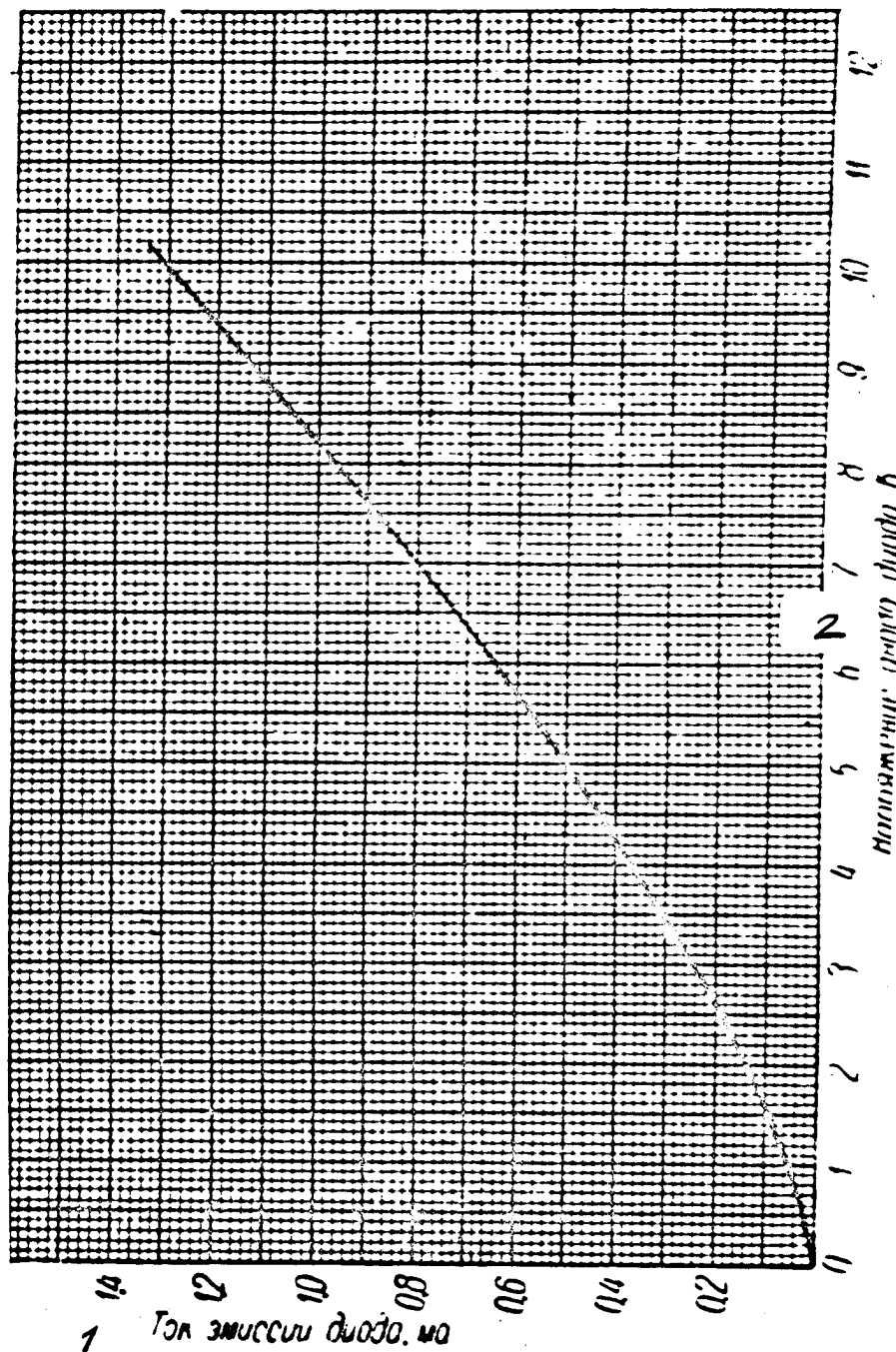
1B1P

* * * * *

Averaged Diode Plate Characteristic

Filament voltage 1.2 v.

1) Diode emission current, ma; 2) diode plate voltage, v.



(Above material published April 1959, PKB, G-1)

DIODE-PENTODE

1B1P

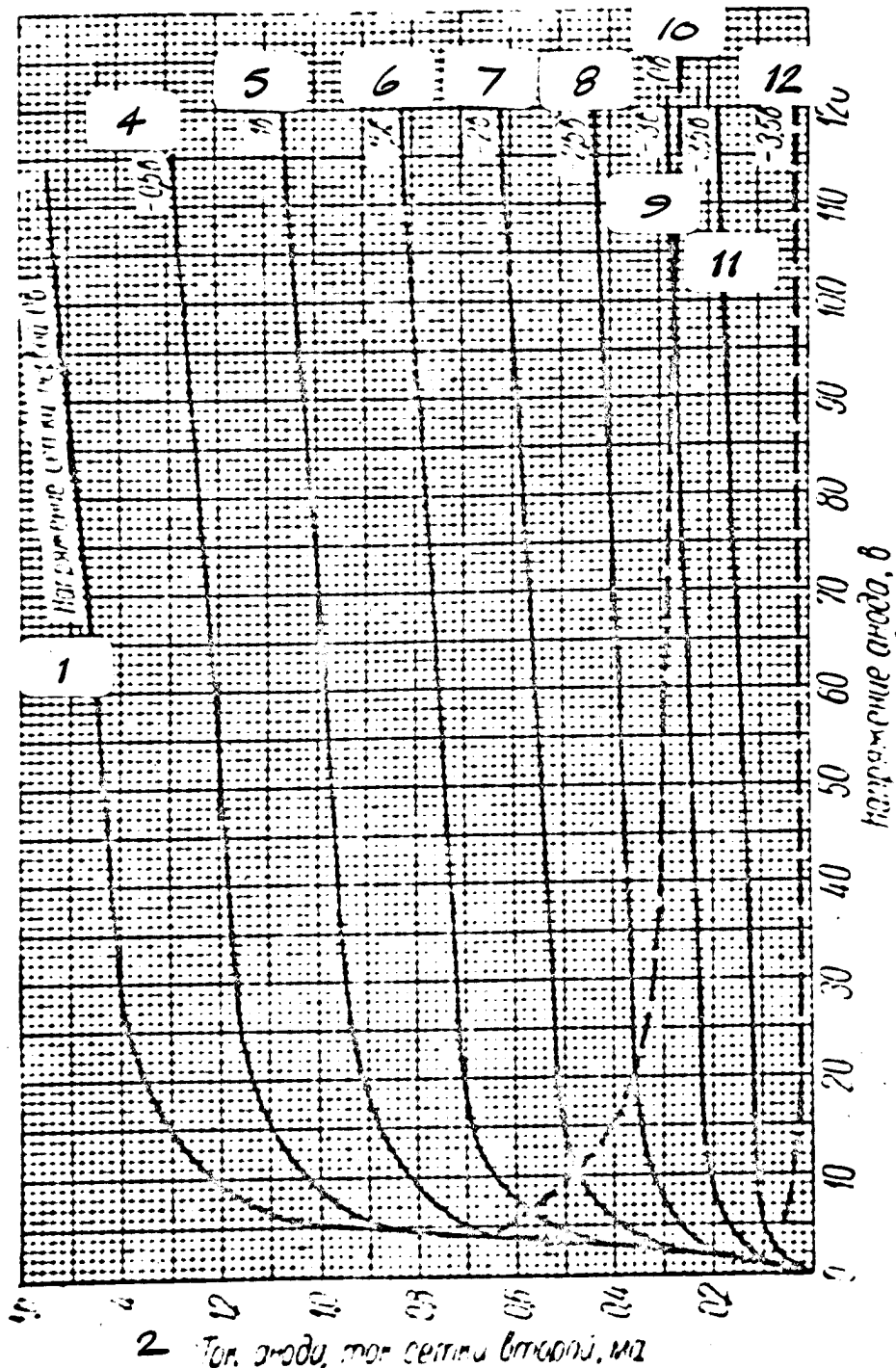
* * * * *

Averaged Characteristics

—— Plate; ----- grid-plate (for second grid).

Filament voltage, 1.2 v; second-grid voltage, 67.5 v.

1) First-grid voltage, 0 v; 2) plate current, second-grid current, ma; 3) plate voltage, v; 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) -2 v; 8) -2.5 v; 9) -3 v; 10) 0 v; 11) -3.5 v; 12) -3.5 v.



DIODE-PENTODE

1B1P

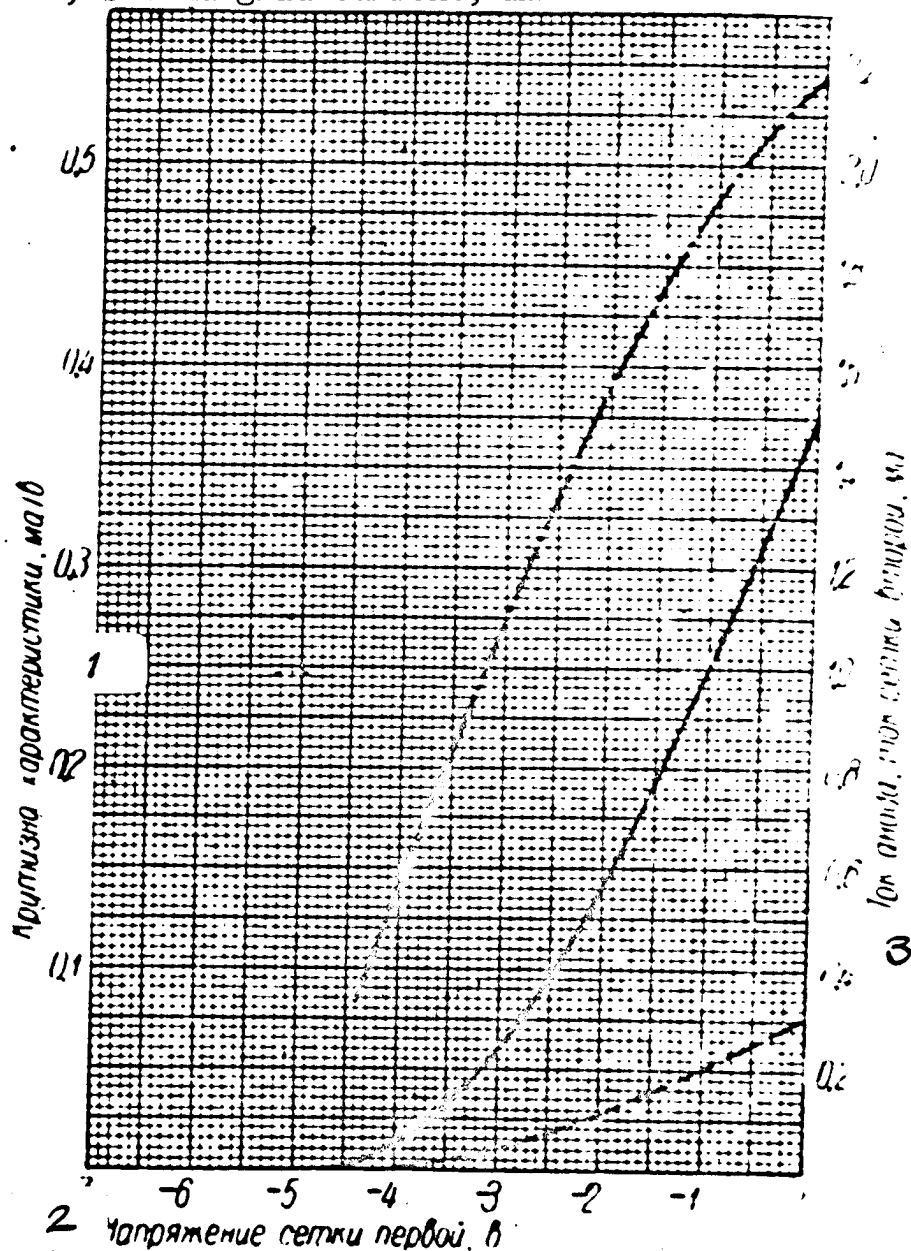
* * * * *

Averaged Characteristics

—— Plate-grid; ----- grid (for second grid); -.-.- transconductance.

Filament voltage, 1.2 v; plate voltage, 67.5 v; second-grid voltage, 67.5 v.

1) Slope of curve, ma/v; 2) first-grid voltage, v; 3) plate current, second-grid current, ma.



(Above material published April 1959, PKB, G-3)

DIODE-PENTODE

1B2P

* * * * *

Basic function — detector and audio-frequency preamplifier.

Structure — glass miniature.

General Data

Cathode — oxide-coated filament-type

Maximum height

60 mm

Maximum diameter

19 mm

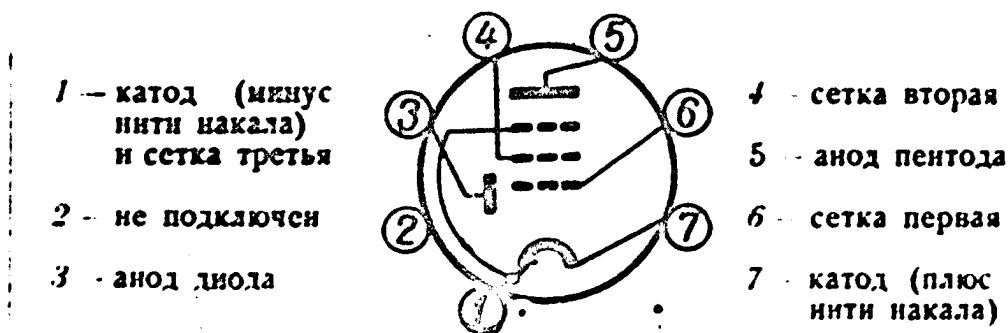
Weight

about 10 grams

Number of pins

7

Dimension drawing — 5P

Connection diagram for electrodes and pins

1) Cathode (negative side of filament) and third grid; 2) not connected; 3) diode plate; 4) screen grid; 5) pentode plate; 6) first grid; 7) cathode (positive side of filament).

Electrical Data

Filament voltage (=)

1.2 v

Filament current

30 ± 3 ma

Plate voltage (=)

60 v

Screen voltage (=)

45 v

First-grid voltage (=)

0 v

Diode plate current*

no less than 7 μa

Pentode plate current

0.9 ± 0.4 ma

Screen current

0.18-0.35 ma

Transconductance

0.55 ma/v

Transconductance with filament voltage of 0.95 v

no less than 0.25 ma/v

*Diode plate connected through 1 kohm resistor to positive cathode (filament) lead.

← Change introduced

(Above material published April 1959, PKB, Sheet 1)

DIODE-PENTODE

1B2P

* * * * *

Internal resistance	1 megohm
Service life	1000 hours
Service-life criteria:	
transconductance	no less than 0.25 ma/v
diode plate current*	no less than 3 μ a

*Diode plate connected through 1 kohm resistor to positive side of cathode (filament).

Interelectrode Capacitances

Pentode input	about 1.85 μ mf
Pentode output	about 2.1 μ mf
Pentode transfer	about 0.27 μ mf
Diode plate-cathode	about 0.3 μ mf

Maximum Permissible Operating Data

Maximum filament voltage (=)	1.4 v
Minimum filament voltage (=)	0.9 v
Maximum power-supply voltage (=)	250 v
Maximum pentode plate voltage (=)	90 v
Maximum screen voltage (=)	75 v
Maximum cathode current	2 ma
Maximum pentode plate dissipation	0.15 watt
Maximum resistance in first-grid circuit	3 megohm

(Above material published April 1959, PKB, Sheet 1)

DIODE-PENTODE

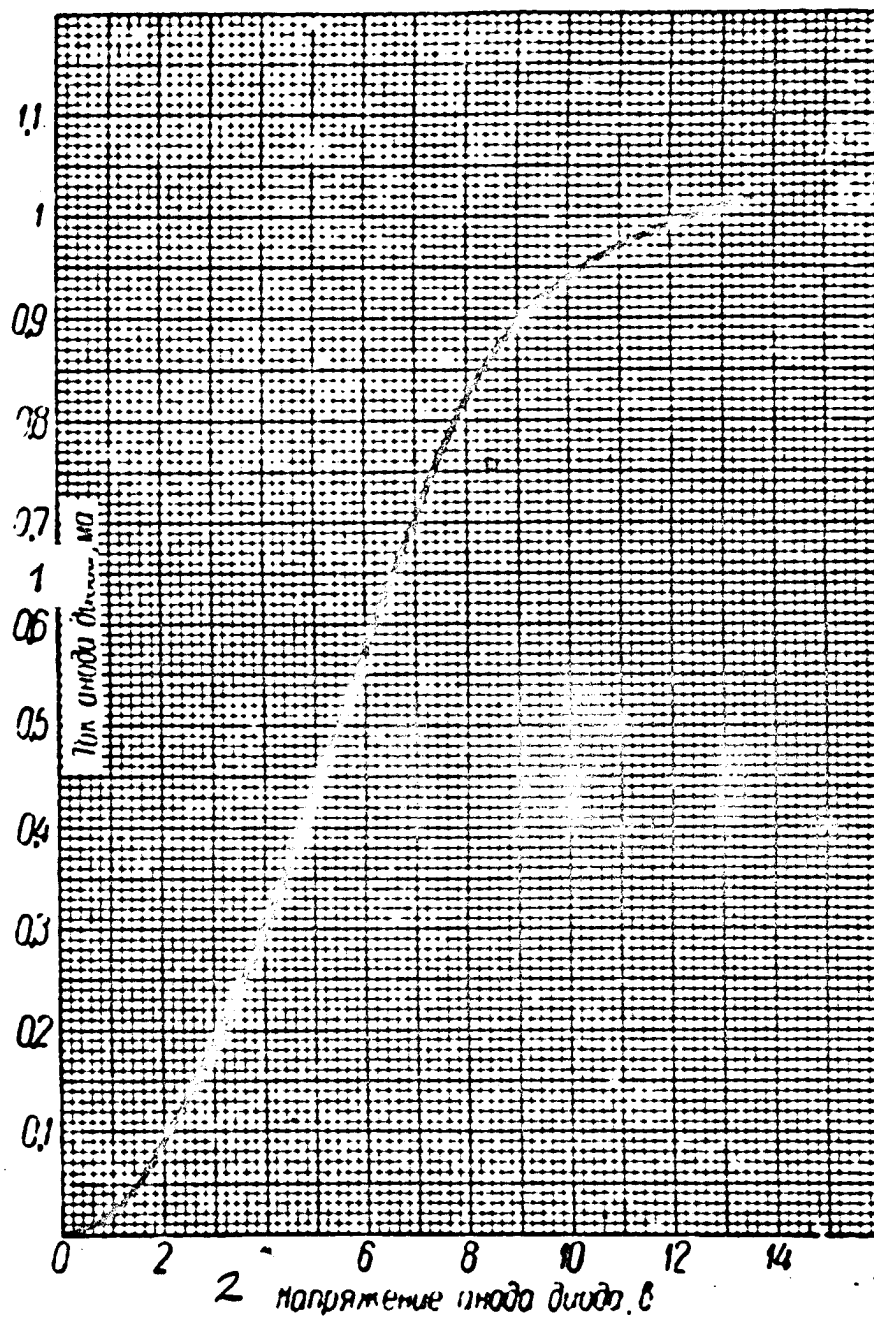
1B2P

* * * * *

Averaged Diode Plate Characteristic

Filament voltage, 1.2 v.

1) Diode plate current, ma; 2) diode plate voltage, v.



(Above material published April 1959, PKB, G-1)

DIODE-PENTODE

1B2P

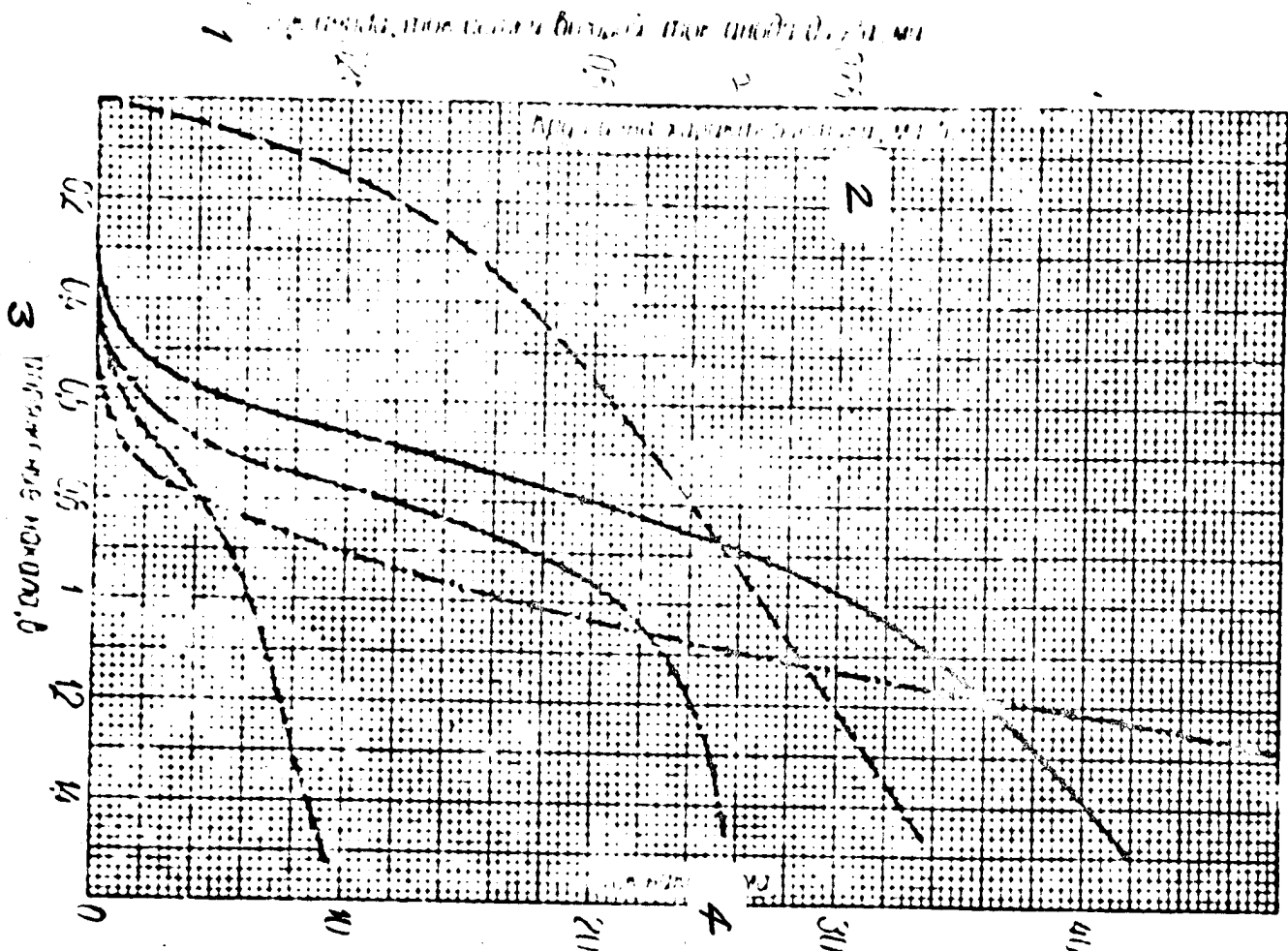
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Averaged Characteristics

(As function of filament voltage): ——— plate current; --- filament current; - - - - - diode plate current; - - - - - screen current; - - - - - transconductance.

Plate voltage, 60 v; first-grid voltage, 0 v; diode plate voltage, 10 v; screen voltage, 45 v.

1) Plate current, screen current, diode plate current, ma; 2) slope of curve, ma/v; 3) filament voltage, v; 4) filament current, ma.



(Above material published April 1959, PKB, G-2)

DIODE-PENTODE

1B2P

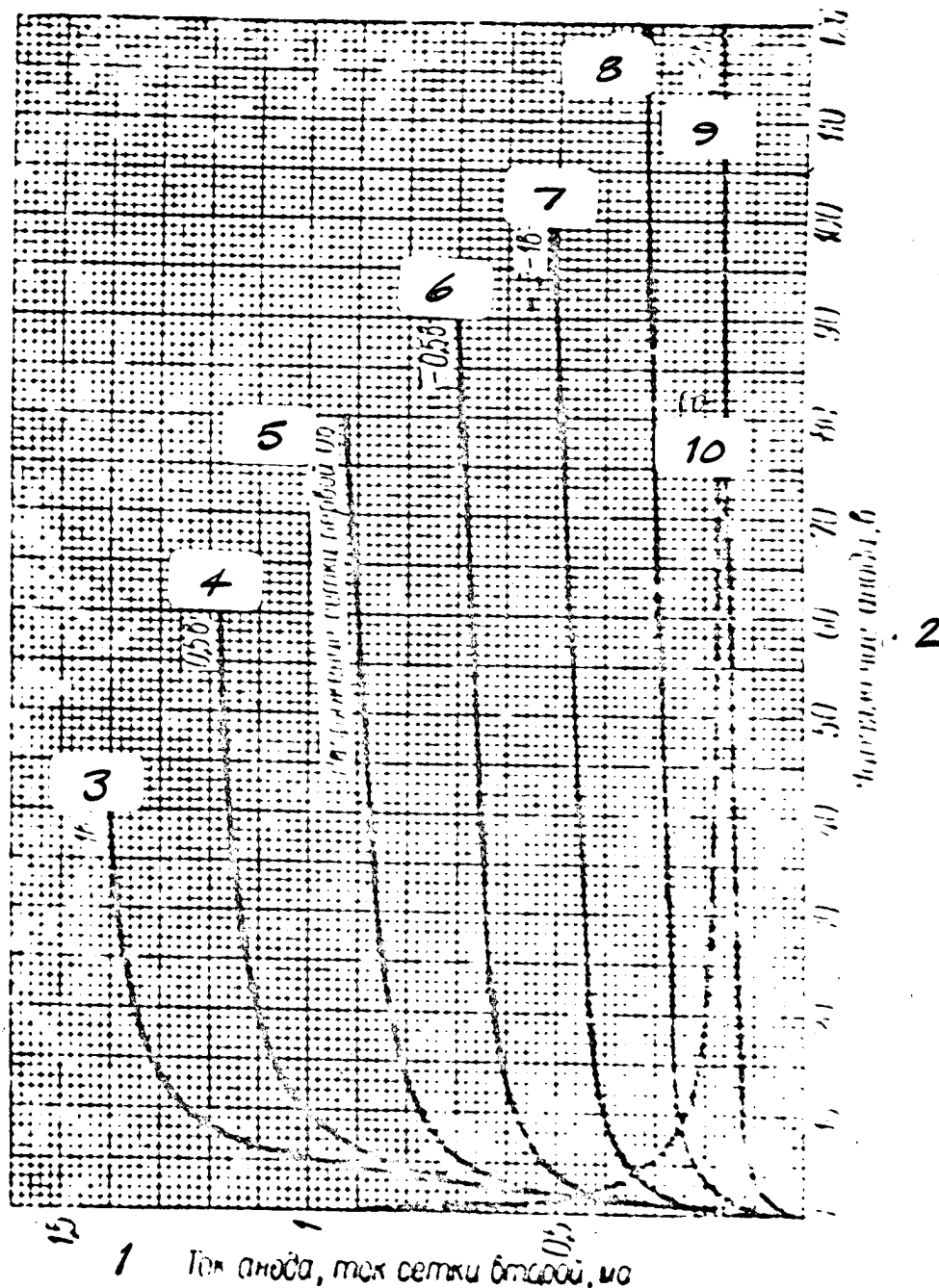
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Averaged Characteristics

— Plate; ----- plate-grid (for screen grid)

Filament voltage, 1.2 v; screen voltage, 45 v.

- 1) Plate current, screen current, ma; 2) plate voltage, v;
 3) 1 v; 4) 0.5 v; 5) first-grid voltage, 0 v; 6) -0.5 v; 7)
 -1 v; 8) -1.5 v; 9) -2 v; 10) 0 v.



(Above material published April 1959, PKB, G-3)

DIODE-PENTODE

1B2P

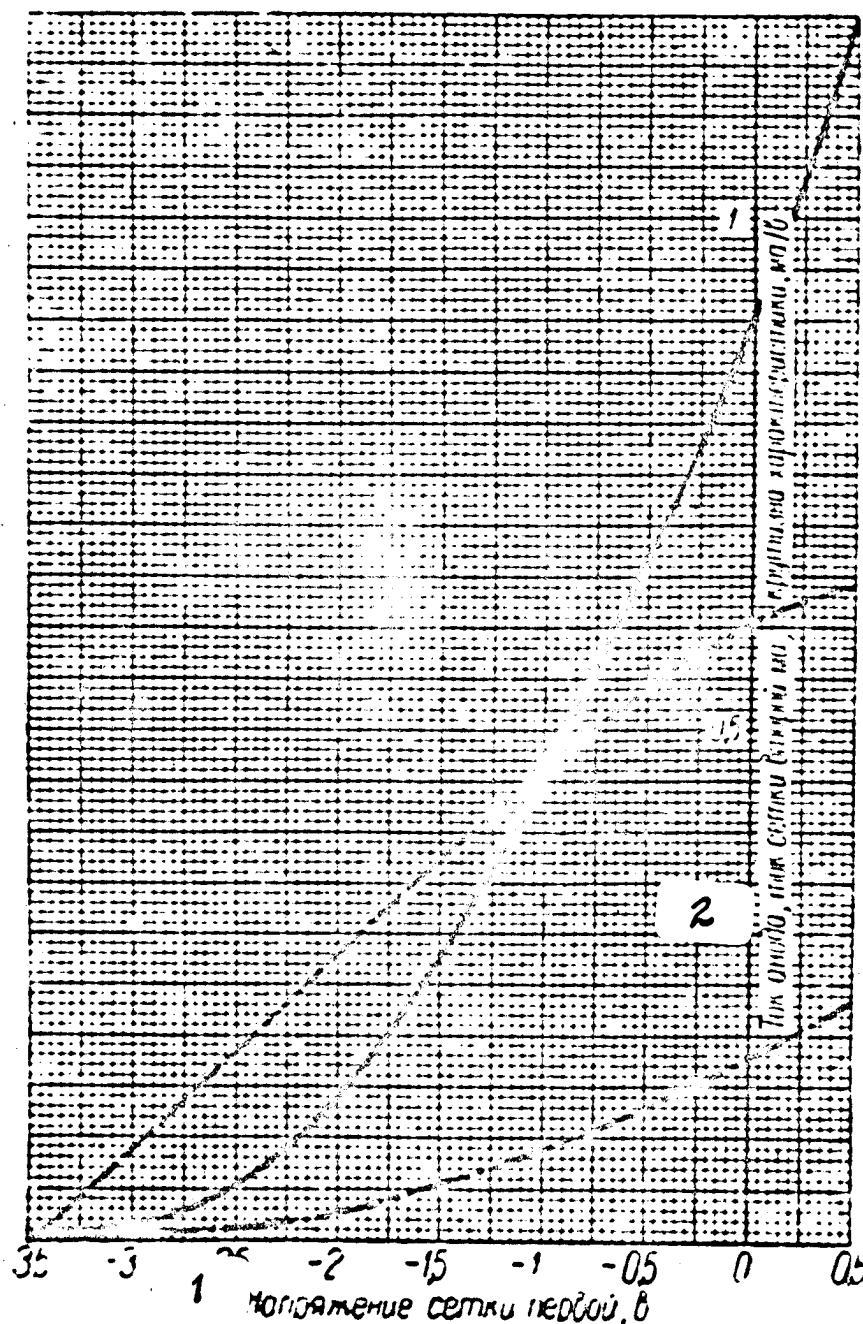
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Averaged Characteristics

— Plate-grid; - - - - grid (for screen grid); - - - - transconductance.

Filament voltage, 1.2 v; plate voltage, 60 v; screen voltage, 45 v.

1) First-grid voltage, v; 2) plate current, screen current, ma, transconductance, ma/v.



(Above material published April 1959, PKB, G-4)

DIODE-PENTODE

1B2P

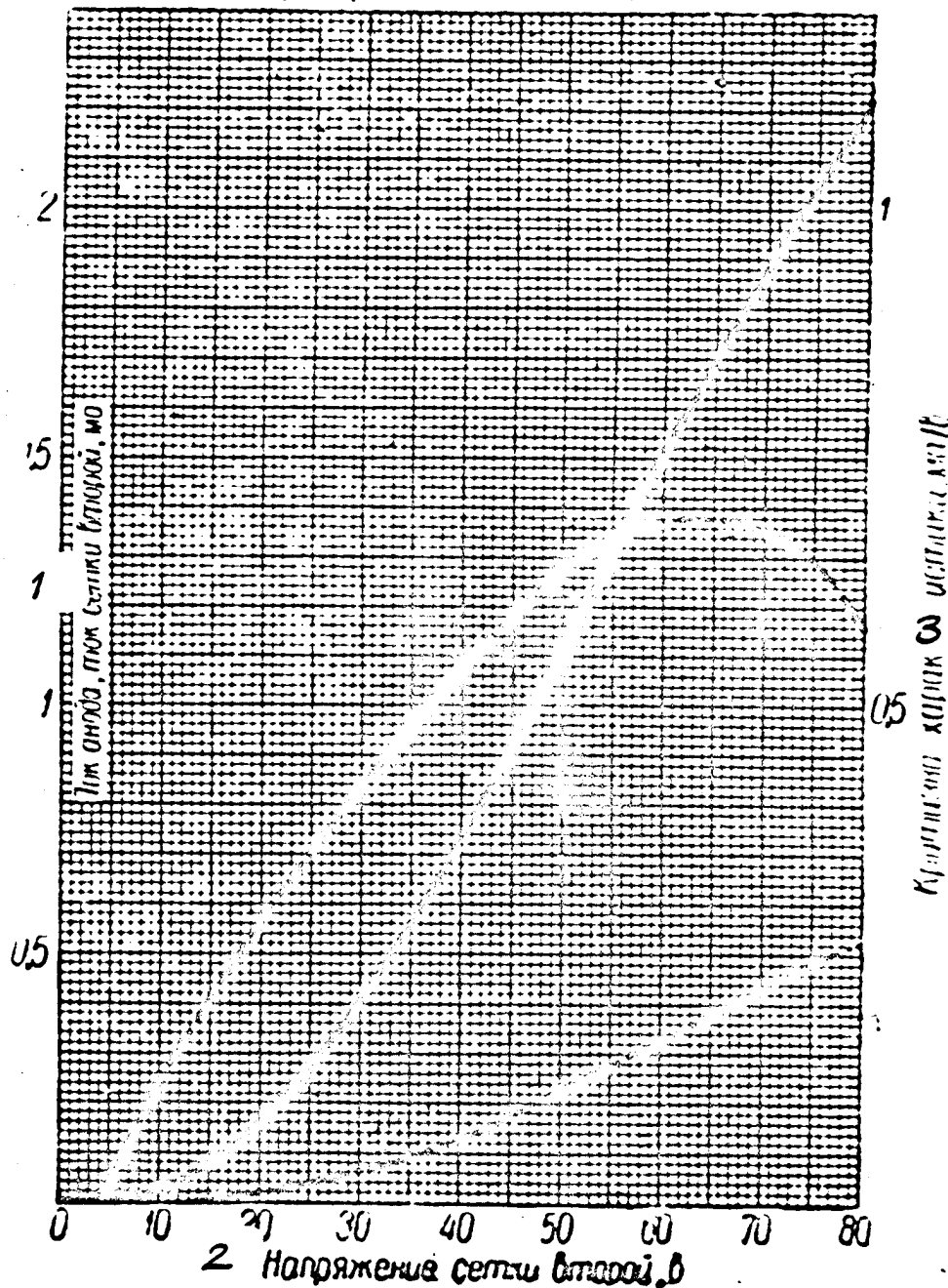
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Averaged Characteristics

—— Plate-grid; -.-.- grid; ----- transconductance.

Filament voltage, 1.2 v; plate voltage, 60 v; first-grid voltage, 0 v.

- 1) Plate current, screen current, ma; 2) screen voltage, v;
3) slope of curve, ma/v.



(Above material published April 1959, PKB, G-5)

RADIO-FREQUENCY PENTODE

1Zh17B

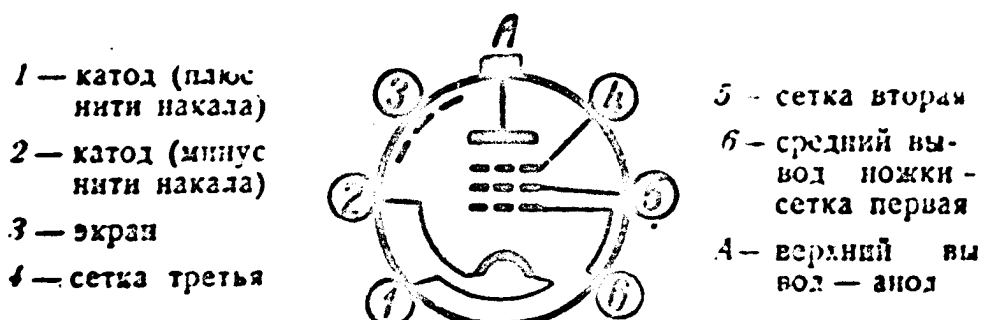
* * * * *

Basic function — radio-frequency voltage amplifier.

Structure — glass subminiature.

Basic Data

Cathode — oxide-coated filament-type	
Maximum height (without leads)	40 mm
Maximum diameter	8.5 mm
Number of leads	7
Length of leads	45 mm
Length of plate lead	25 mm
Lead diameter	0.4-0.5 mm
Diameter of plate lead	0.35-0.4 mm
Maximum weight	4 grams
Dimension diagram — 11B.	

Connection diagram for electrodes and leads

1) Cathode (positive side of filament); 2) cathode (negative side of filament); 3) shield; 4) third grid; 5) screen grid; 6) center lead in stem — first grid; A) top lead — plate.
The shield is connected to a common ground.

Electrical Data

Filament voltage (=)	1.2 v
Filament current	60 ± 6 ma
Plate voltage (=)	60 v
Screen voltage (=)	40 v
First-grid voltage (=)	0 v
Plate current	2 ± 0.5 ma
Screen current	no more than 0.25 ma
Transconductance	no less than 1 ma/v
Transconductance with filament voltage of 0.95 v	no less than 0.85 ma/v

← Change introduced

(Above material published April 1959, PKB, Sheet 1)

RADIO-FREQUENCY PENTODE

1Zh17B

* * * * *

Input resistance at 60 Mc*	60 kohm	←
Equivalent internal-noise resistance at 30 Mc	6 kohm	←
First-grid back current**	no more than 0.5 μ a	
Service life	2000 hours	
Service-life criterion: transconductance	no less than 0.85 ma/v	

*For a first-grid voltage of minus 1 v. ←

**With a first-grid voltage of 2 v, screen voltage of 60 v, and 0.5 megohm resistance. ←

Interelectrode Capacitances*

Input	3.7 $\pm$ 0.37 μ mf	←
Output	2.7 $\pm$ 0.4 μ mf	←
Transfer	no more than 0.005 μ mf	←
Plate-cathode	no more than 0.015 μ mf	

*Measured in shield.

Maximum Permissible Operating Data

Maximum filament voltage (=)	1.4 v	
Minimum filament voltage (=)	0.95 v	←
Maximum plate voltage (=)	90 v	
Maximum screen voltage (=)	60 v	
Maximum plate dissipation	0.5 watt	
Maximum screen dissipation	0.18 watt	
Maximum cathode current	5 ma	

← Change introduced

(Above material published April 1959, PKB, Sheet 1)

RADIO-FREQUENCY PENTODE

1Zh17B

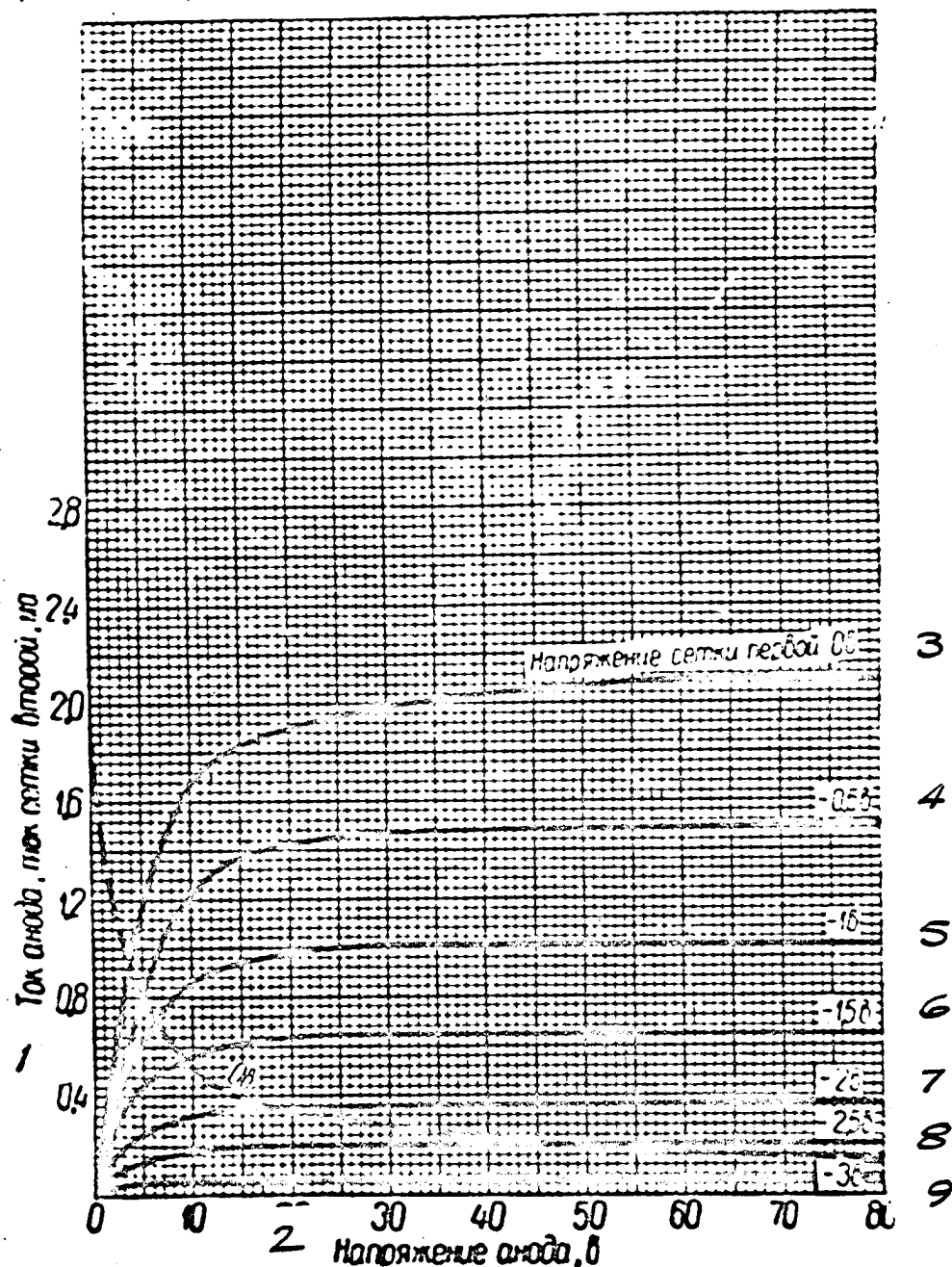
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Averaged Characteristics

—— Plate; ----- grid-plate (for screen).

Filament voltage, 1.2 v; screen voltage, 40 v.

- 1) Plate current, screen current, ma; 2) plate voltage, v;
 3) first-grid voltage, 0 v; 4) -0.5 v; 5) -1 v; 6) -1.5 v;
 7) -2 v; 8) -2.5 v; 9) -3 v.



(Above material published April 1959, PKB, G-1)

RADIO-FREQUENCY PENTODE

1Zh17B

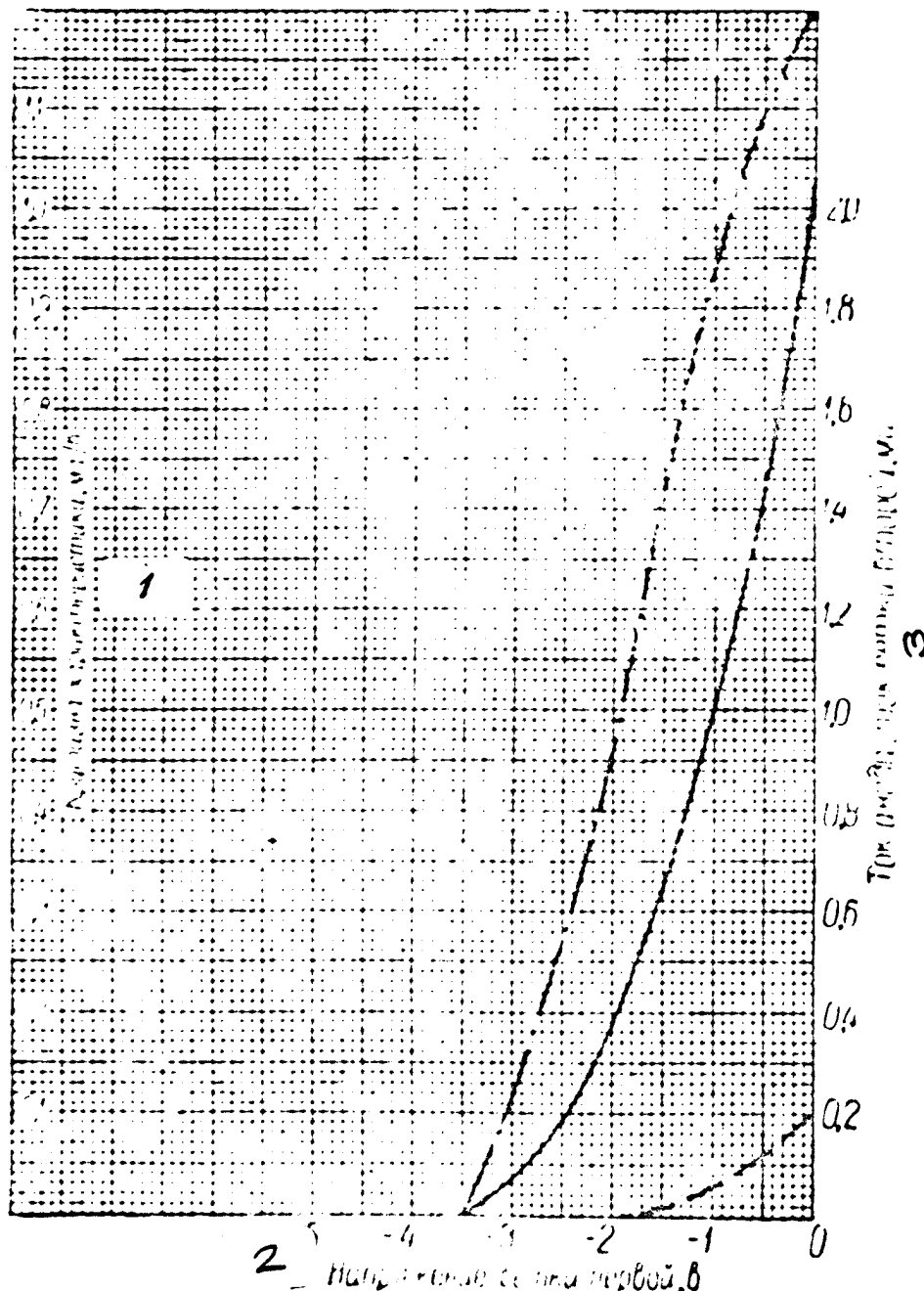
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Averaged Characteristics

—— Plate-grid; - - - - grid (for screen); - - - - transconductance.

Filament voltage, 1.2 v; plate voltage, 60 v; screen voltage, 40 v.

1) Transconductance, ma/v; 2) first-grid voltage, v; 3) plate current, screen current, ma.



(Above material published April 1959, PKB, G-2)

RADIO-FREQUENCY PENTODE

1Zh17B

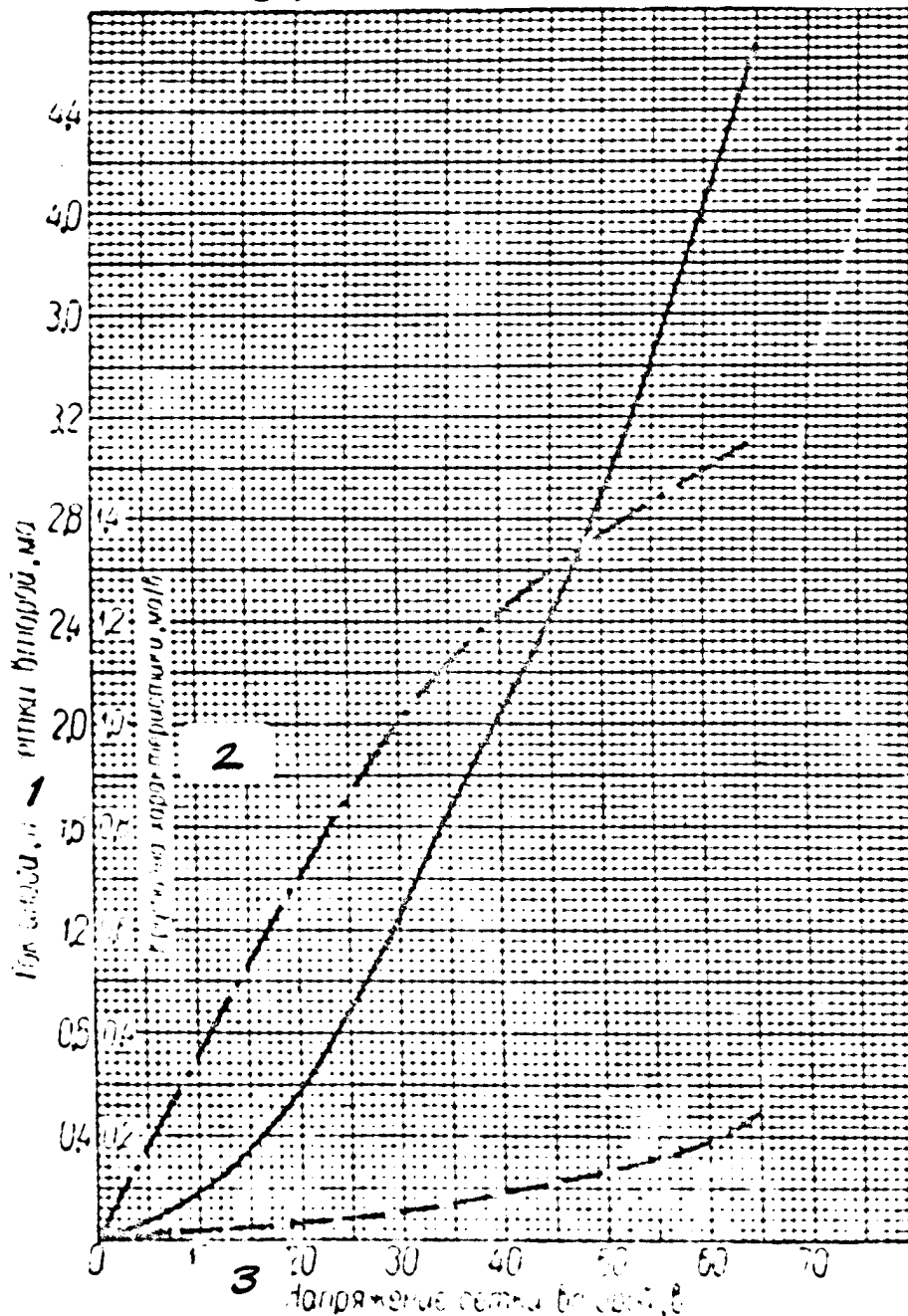
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Averaged Characteristics

—— Plate-grid; ----- grid; -.-.- transconductance.

Filament voltage, 1.2 v; plate voltage, 60 v; first-grid voltage, 0 v.

- 1) Plate current, screen current, ma; 2) transconductance, ma/v;
 3) screen voltage, v.



(Above material published April 1959, PKB, G-3)

RADIO-FREQUENCY PENTODE

1Zh18B

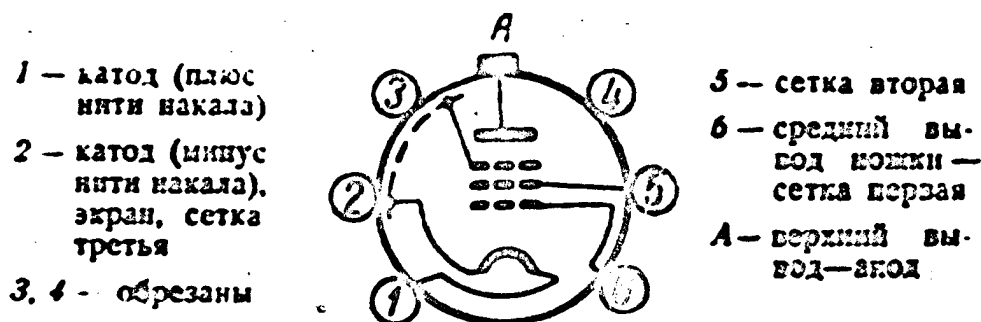
* * * * *

Basic function — audio-frequency amplifier.

Structure — glass subminiature.

General Data

Cathode — oxide-coated filament-type	
Maximum height (without leads)	40 mm
Maximum diameter	8.5 mm
Number of leads	7
Length of leads	45 mm
Length of plate lead	25 mm
Lead diameter	0.4-0.5 mm
Plate-lead diameter	0.35-0.4 mm
Maximum weight	4 grams
Dimension drawing — 11B.	

Connection diagram for electrodes and leads

1) Cathode (positive side of filament); 2) cathode (negative side of filament), shield, third grid; 3, 4) cut off; 5) screen; 6) center lead of stem — first grid; A) top lead — plate.

Electrical Data

Filament voltage (=)	1.2 v
Filament current	21 ± 2 ma
Plate voltage (=)	60 v
Screen voltage (=)	45 v
First-grid voltage (=)	0 v
Plate current	1.15 ± 0.45 ma
Screen current	no more than 0.15 ma
Transconductance	no less than 0.7 ma/v
Transconductance at filament voltage of 0.95 v	no less than 0.55 ma/v

← Change introduced

(Above material published April 1959, PKB, Sheet 1)

RADIO-FREQUENCY PENTODE

1Zh18B

* * * * *

Input resistance at 60 Mc*	80 kohm	←
Equivalent internal-noise resistance at 30 Mc	6 kohm	←
First-grid back current**	no more than 0.5 μ a	
Service life	2000 hours	
Service-life criterion: transconductance	no less than 0.55 ma/v	

*With first-grid voltage of minus 1 v.

**With first-grid voltage of 1 v, screen voltage of 60 v, and resistance of 0.5 megohm.

Interelectrode Capacitances*

Input	3.75 $\pm$ 0.7 μ mf	←
Output	2.7 $\pm$ 0.4 μ mf	←
Transfer	no more than 0.005 μ mf	←
Plate-cathode	no more than 0.015 μ mf	

*Measured in shield.

Maximum Permissible Operating Values

Maximum filament voltage (=)	1.4 v
Minimum filament voltage (=)	0.95 v
Maximum plate voltage (=)	90 v
Maximum screen voltage (=)	60 v
Maximum plate dissipation	0.3 watt
Maximum screen dissipation	0.1 watt
Maximum cathode current	3 ma

← Change introduced

(Above material published April 1959, PKB, Sheet 1)

RADIO-FREQUENCY PENTODE

1Zh18B

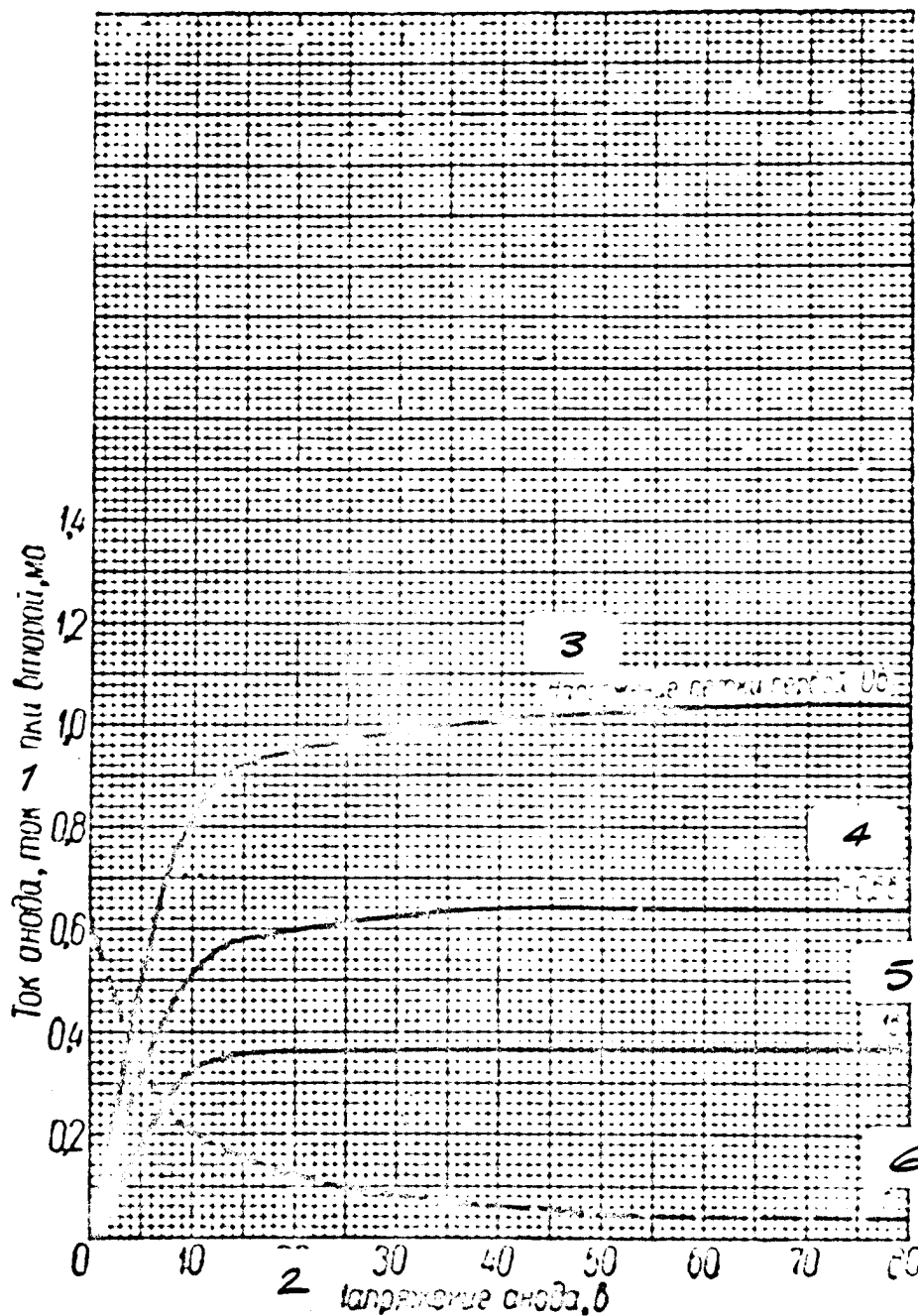
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Averaged Characteristics

— Plate; ----- plate-grid (for screen grid).

Filament voltage, 1.2 v; screen voltage, 45 v.

- 1) Plate current, screen current, ma; 2) plate voltage, v;
 3) first-grid voltage, 0 v; 4) -0.5 v; 5) -1 v; 6) 0 v.



(Above material published April 1959, PKB, G-1)

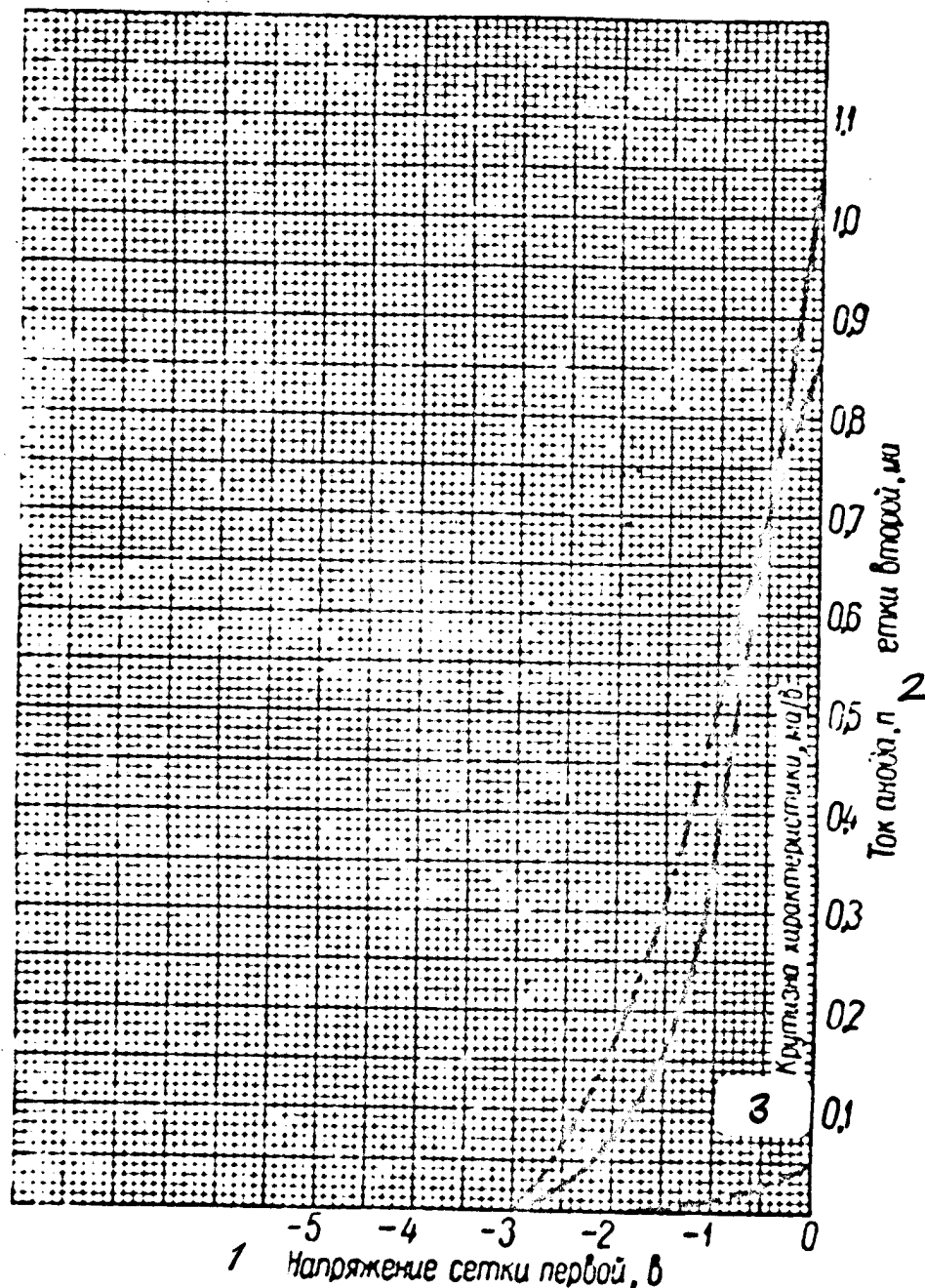
RADIO-FREQUENCY PENTODE

1Zh18B

* * * * *

Averaged Characteristics

- Plate-grid; ----- grid (for screen); - - - - transconductance.
 Filament voltage, 1.2 v; plate voltage, 60 v; screen voltage, 45 v.
 1) First-grid voltage, v; 2) plate current, screen current, ma,
 3) slope of curve, ma/v.



(Above material published April 1959, PKB, G-2)

RADIO-FREQUENCY PENTODE

1Zh18B

* * * * *

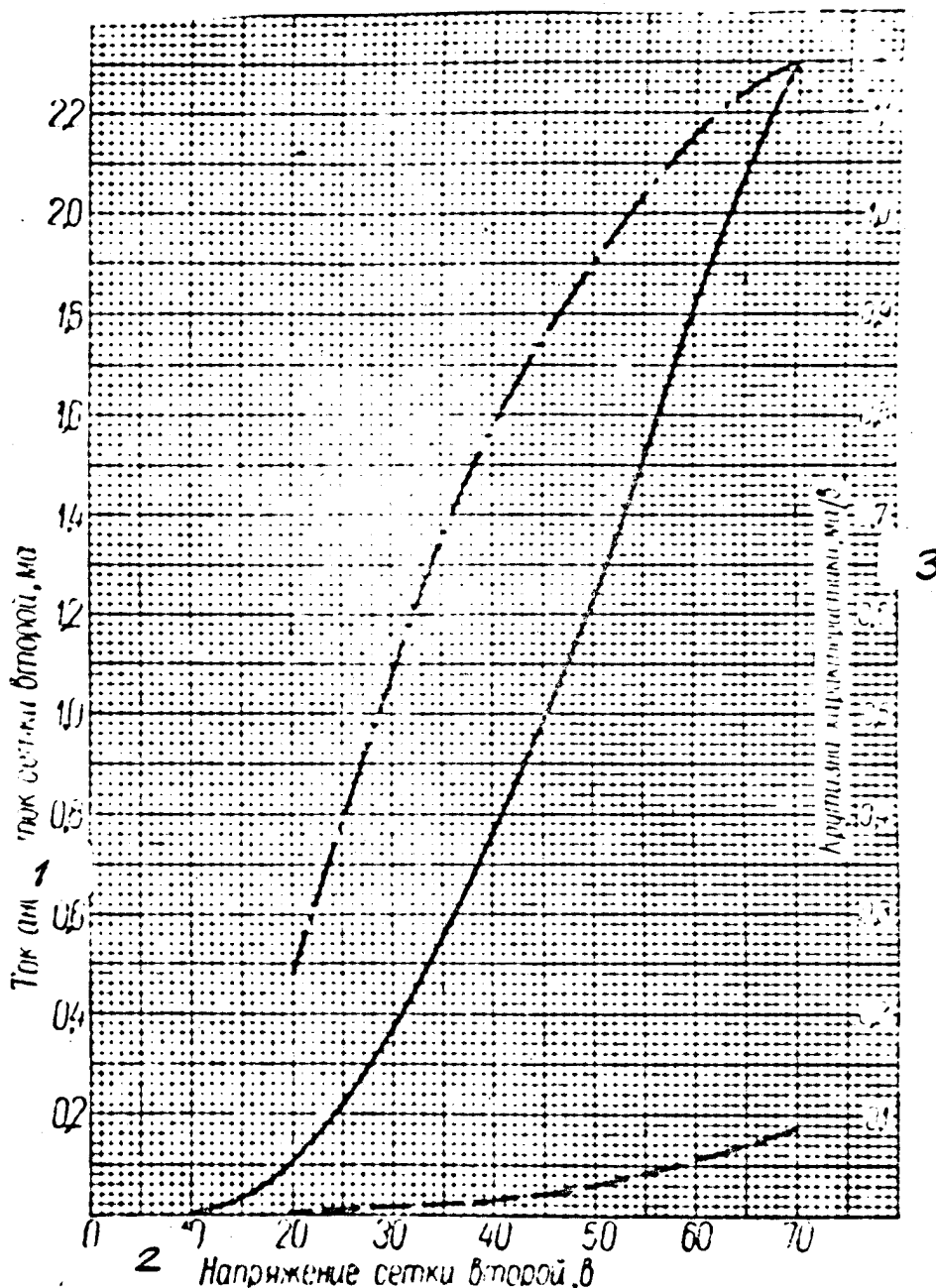
Averaged Characteristics

— Plate-grid; ----- grid; -.-.- transconductance.

Filament voltage, 1.2 v; plate voltage, 60 v; first-grid voltage,

0 v.

- 1) Plate current, screen current, ma; 2) screen voltage, v;
 3) transconductance, ma/v.



(Above material published April 1959, PKB, G-3)

TRIODE-HEXODE

1I2P

* * * * *

Basic function — frequency conversion up to 30 Mc.

Structure — glass miniature.

General Data

Cathode — oxide-coated filament-type

Maximum height

60 mm

Maximum diameter

22.5 mm

Weight

12 grams

Number of pins

9

Dimension drawing — 15P.

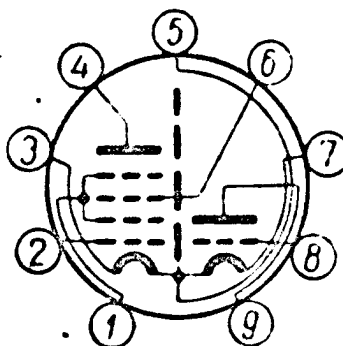
Connection diagram for electrodes and pins

1 — сетки вторая и четвертая гексода

2 — сетка первая гексода

3 — катод гексода (плюс нити накала)

4 — анод гексода



5 — средняя точка катода (минус нити накала) и экран

6 — сетка третья гексода

7 — катод триода (плюс нити накала)

8 — сетка триода

9 — анод триода

1) Second and fourth grids of hexode; 2) first grid of hexode; 3) hexode cathode (positive side of filament); 4) hexode plate; 5) cathode center tap (negative side of filament) and shield; 6) hexode third grid; 7) triode cathode (positive side of filament); 8) triode grid; 9) triode plate.

Electrical Data

Filament voltage (=)

1.2 v

Filament current

60 ma

Triode section

Plate voltage (=)

60 v

Grid voltage (=)

0 v

Plate current

1.2 ma

Plate current*

1.05 ma

Triode-grid current, with grid connected to third grid of hexode*

145 μ a

Transconductance

1.0 ma/v

Gain

25

*Under dynamic conditions. Triode grid connected to hexode third grid. Triode grid voltage 8 v (eff), resistance in grid circuit, 47 kohm.

Preliminary data

(Above material published April 1959, PKB, Sheet 1)

TRIODE-HEXODE

112P

* * * * *

Hexode section

Plate voltage (=)	60 v
Second- and fourth-grid voltages (=)	45 v
Third-grid voltage {=}	0 v
First-grid voltage (=)	0 v
Plate current	1.05 ma
Plate current*	0.55 ma
Second- and fourth-grid currents	0.35 ma
Second- and fourth-grid currents*	0.7 ma
Transconductance	0.75 ma/v
Conversion transconductance*	0.23 ma/v
Internal resistance	0.65 megohm
Internal resistance*	1 megohm
Equivalent noise resistance	12 kohm
Equivalent noise resistance*	70 kohm

*Under dynamic conditions. Triode grid connected to third grid of hexode. Triode grid voltage 8 v (eff), resistance in grid circuit, 47 kohm.

Service life	1000 hours
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Interelectrode Capacitances

Triode input	0.7 $\mu\mu\text{f}$
Triode output	3 $\mu\mu\text{f}$
Triode transfer	1.9 $\mu\mu\text{f}$
Hexode input, first grid	3.5 $\mu\mu\text{f}$
Hexode input, third grid	6.3 $\mu\mu\text{f}$
Hexode output	4.7 $\mu\mu\text{f}$
Hexode transfer, first grid	no more than 0.1 $\mu\mu\text{f}$
Hexode transfer, third grid	no more than 0.25 $\mu\mu\text{f}$
Hexode plate-triode plate	no more than 0.3 $\mu\mu\text{f}$
Hexode first grid-hexode third grid	no more than 0.3 $\mu\mu\text{f}$

Maximum Permissible Operating Values

Maximum filament voltage (=)	1.4 v
Minimum filament voltage (=)	0.9 v
Maximum triode plate voltage (=)	90 v
Maximum hexode plate voltage (=)	90 v
Maximum second- and fourth-grid voltages (=)	75 v
Maximum power-supply voltage for plates and hexode second and fourth grids (=)	250 v
Maximum triode cathode current	2.5 ma

Preliminary data

(Above material published April 1959, PKB, Sheet 1)

TRIODE-HEXODE

1I2P

* * * * *

Maximum hexode cathode current	2.5 ma
Maximum triode plate dissipation	0.25 watt
Maximum hexode plate dissipation	0.3 watt
Maximum second- and fourth-grid dissipa- tions for hexode	0.1 watt
Maximum resistance in hexode first-grid circuit	3.0 megohm*

*At frequencies above 15 Mc, the maximum resistance should not exceed 1.0 megohm.

Preliminary data

TRIODE-HEXODE

1I2P

* * * * *

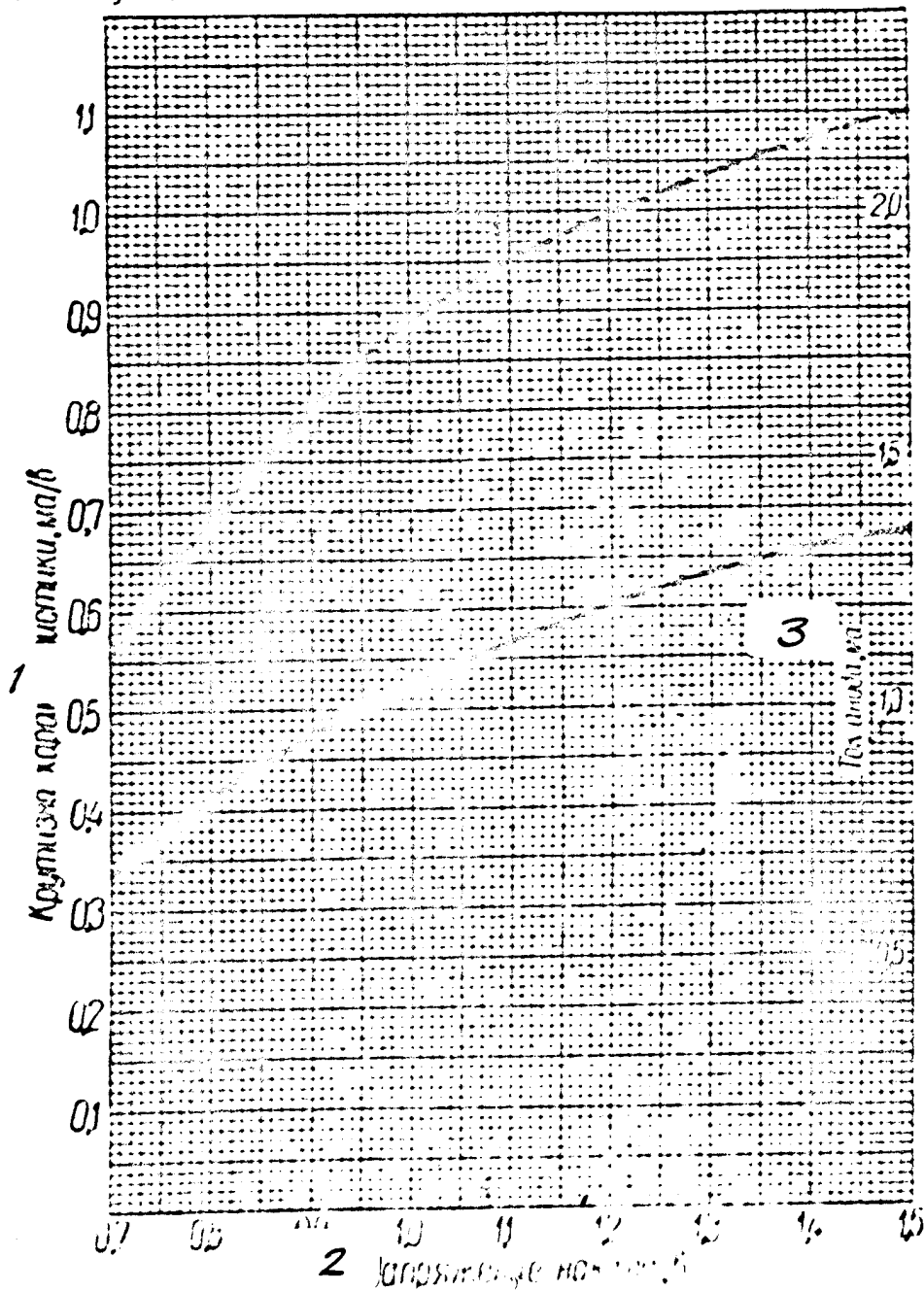
Averaged Triode Characteristics

(As function of filament voltage): ——— plate current;

----- transconductance.

Plate voltage, 60 v; grid voltage, 0 v.

1) Transconductance, ma/v; 2) filament voltage, v; 3) plate current, ma.



(Above material published April 1959, PKB, G-1)

TRIODE-HEXODE

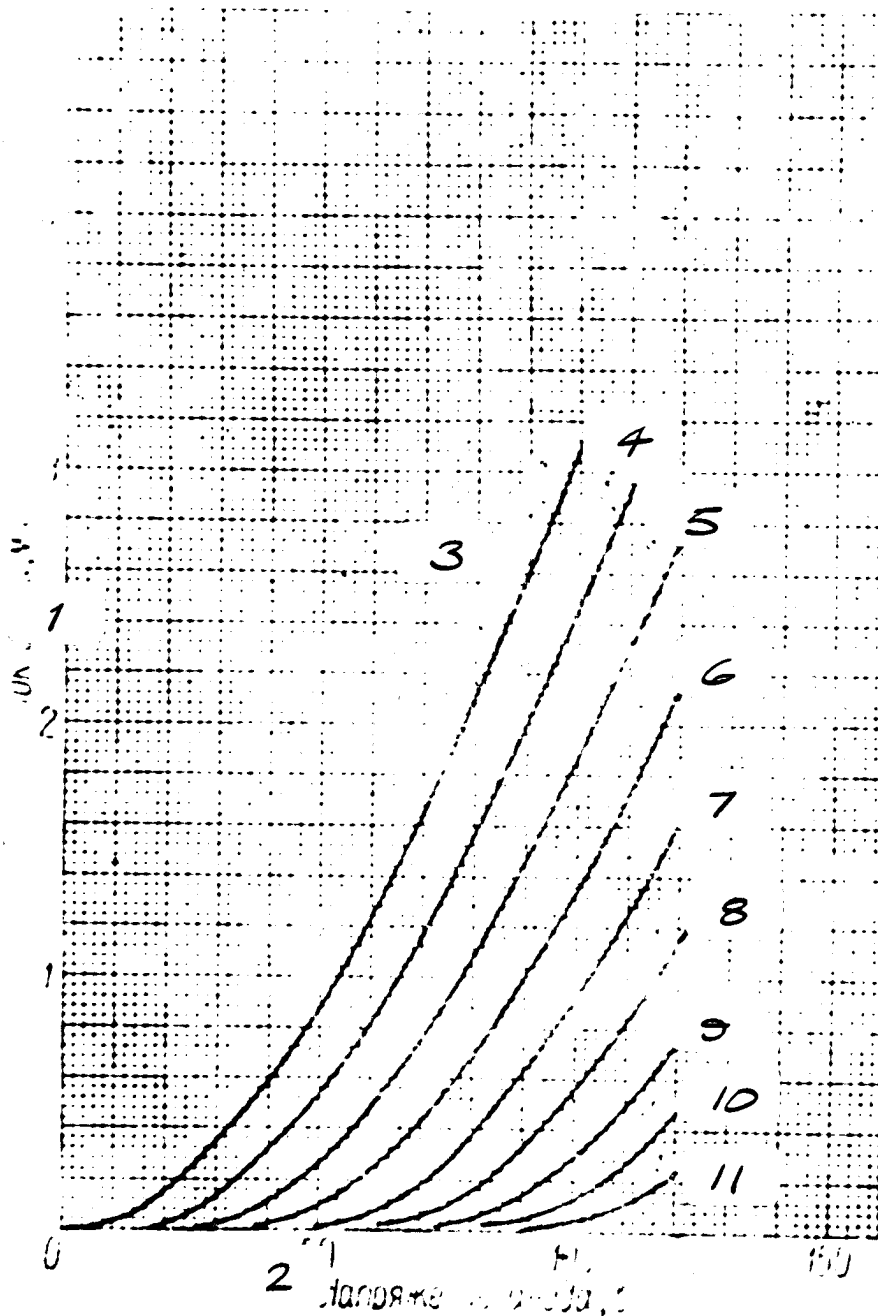
1I2P

* * * * *

Averaged Triode Plate Characteristics

Filament voltage, 1.2 v.

1) Plate current, ma; 2) plate voltage, v; 3) grid voltage,
 0 v; 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) -2 v; 8) -2.5 v; 9)
 -3 v; 10) -3.5 v; 11) -4 v.



(Above material published April 1959, PKB, G-2)

TRIODE-HEXODE

112P

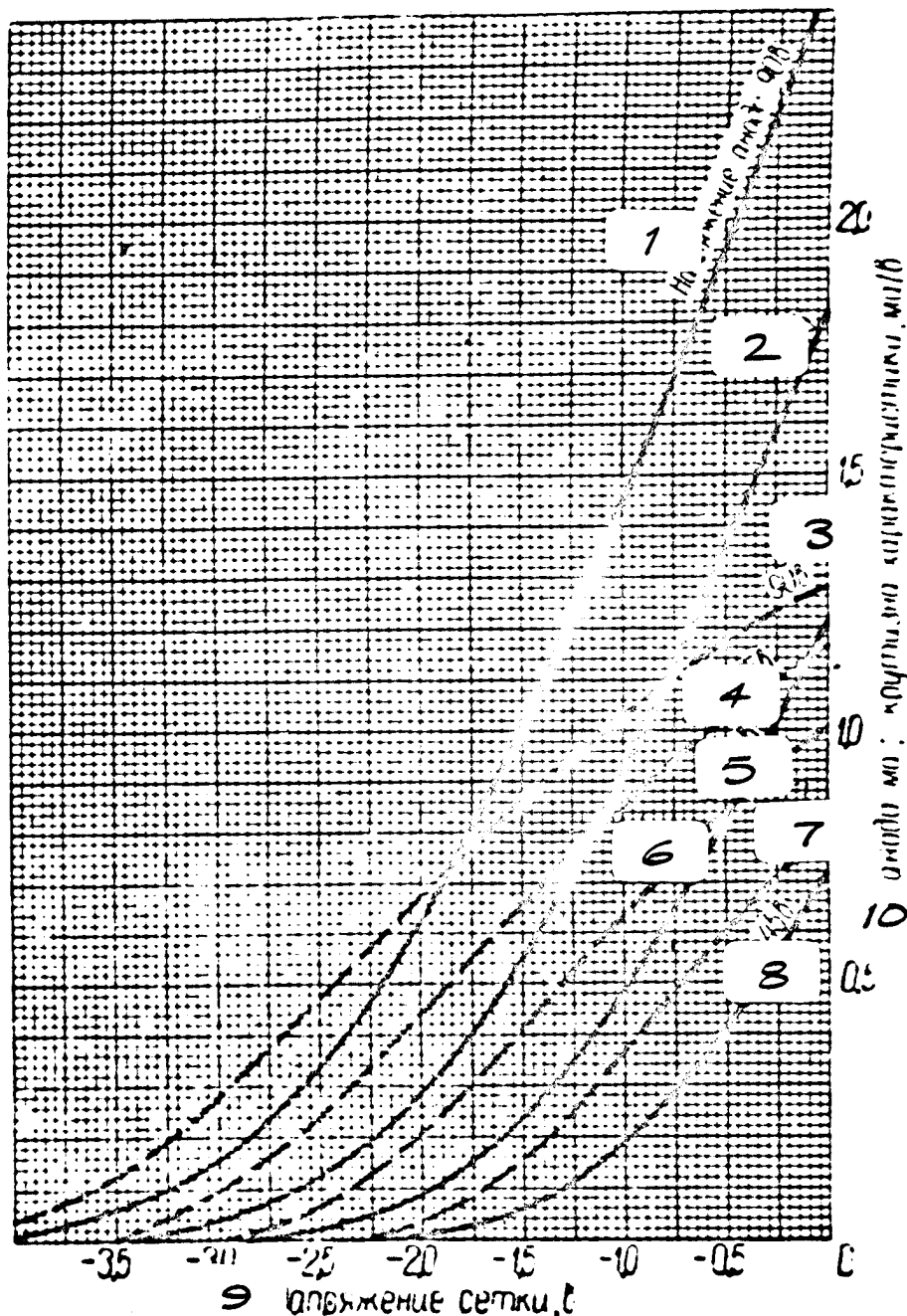
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Average Triode Characteristics

—— Plate-grid; ----- transconductance.

Filament voltage, 1.2 v.

1) Plate voltage, 90 v; 2) 75 v; 3) 90 v; 4) 75 v; 5) 60 v;
 6) 60 v; 7) 45 v; 8) 45 v; 9) grid voltage, v; 10) plate current, ma; transconductance, ma/v.



(Above material published April 1959, PKB, G-3)

TRIODE-HEXODE

1I2P

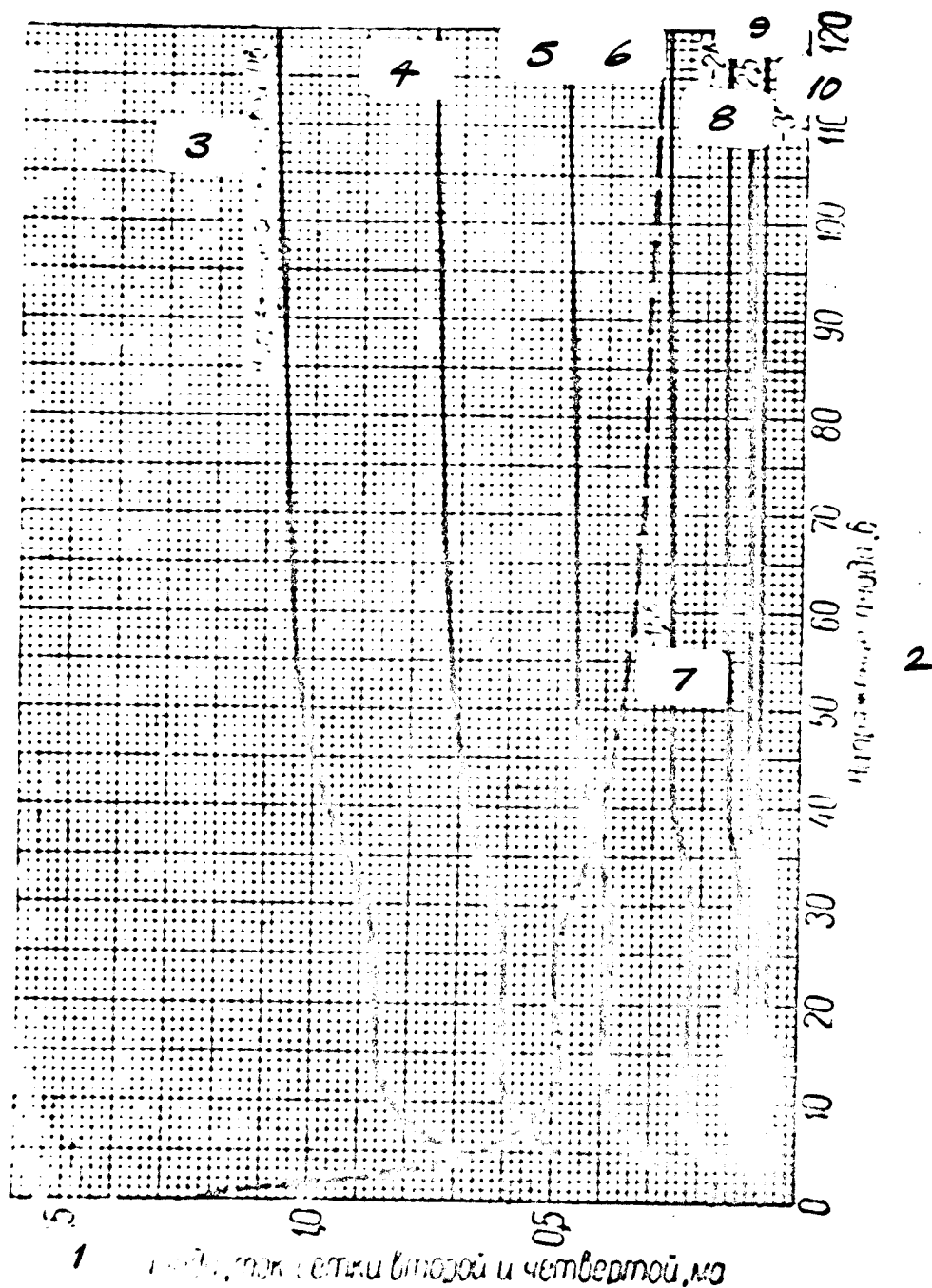
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Average Hexode Characteristics

—— Plate; ----- grid-plate (for second and fourth grids).

Filament voltage, 1.2 v; second and fourth grid voltages, 45 v;
third-grid voltage, 0 v.

1) Plate current, second and fourth grid currents, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -0.5 v; 5) -1 v; 6) 0 v; 7) -1.5 v; 8) -2 v; 9) -2.5 v; 10) -3 v.



TRIODE-HEXODE

1I2P

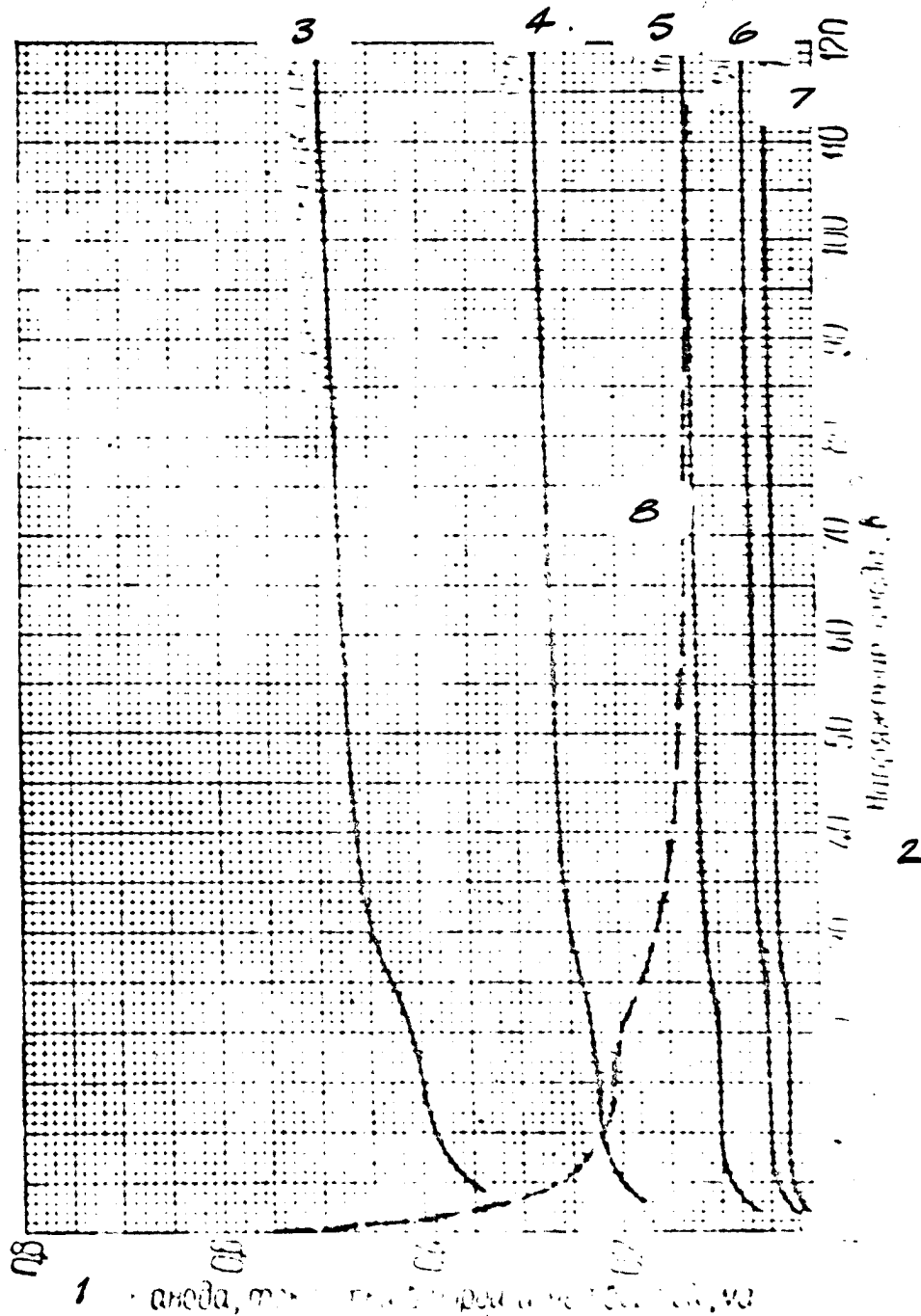
* * * * *

Average Hexode Characteristics

—— Plate; ----- grid-plate (for second and fourth grids).

Filament voltage, 1.2 v; second- and fourth-grid voltages, 30 v;
third-grid voltage, 0 v.

1) Plate current, second- and fourth-grid currents, ma; 2)
plate voltage, v; 3) first-grid voltage, 0 v; 4) -0.5 v; 5)
-1 v; 6) -1.5 v; 7) -2 v; 8) 0 v.



TRIODE-HEXODE

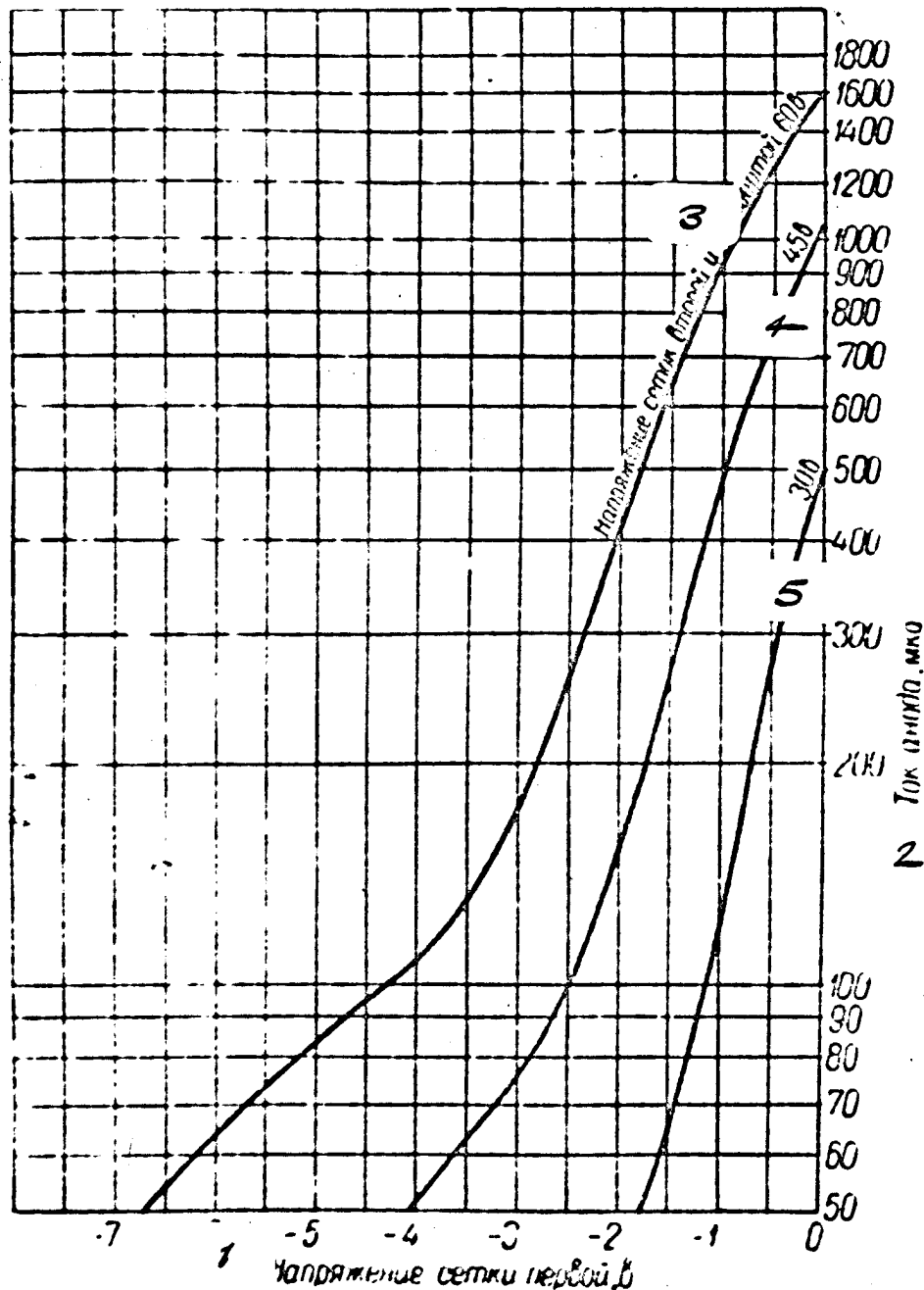
1I2P

* * * * *

Average Plate-Grid Characteristics for Hexode

Filament voltage, 1.2 v; plate voltage, 60 v; third-grid voltage, 0 v.

1) First-grid voltage, v; 2) plate current, μ a; 3) second and fourth grid voltages, 60 v; 4) 45 v; 5) 30 v.



(Above material published April 1959, PKB, G-6)

TRIODE-HEXODE

1I2P

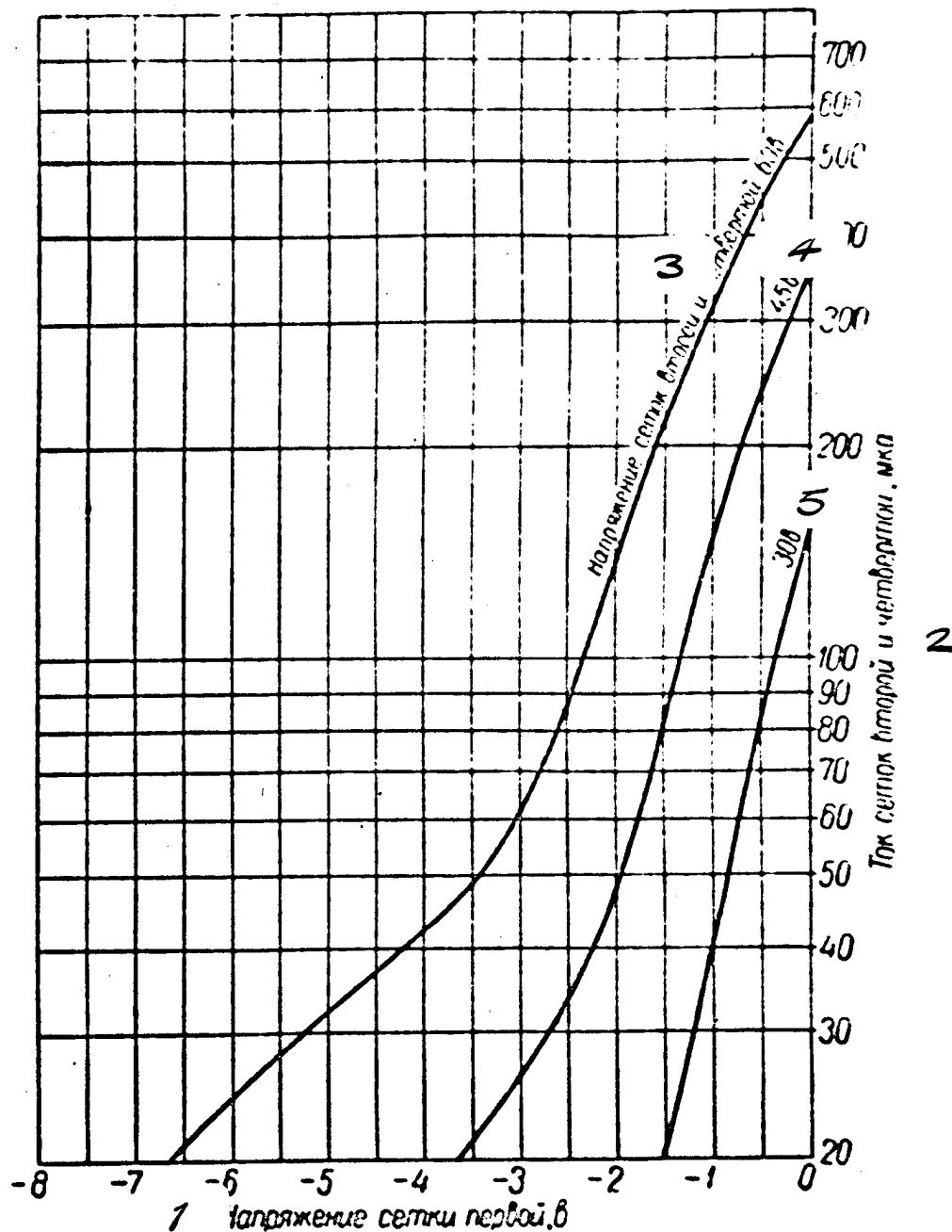
* * * * *

Average Grid Characteristics for Hexode (for second and fourth grids)

Filament voltage, 1.2 v; plate voltage, 60 v; third-grid voltage,

0 v.

1) First-grid voltage, v; 2) second and fourth grid currents, μ a; 3) second and fourth grid voltages, 60 v; 4) 45 v; 5) 30 v.



(Above material published April 1959, PKB, G-7)

TRIODE-HEXODE

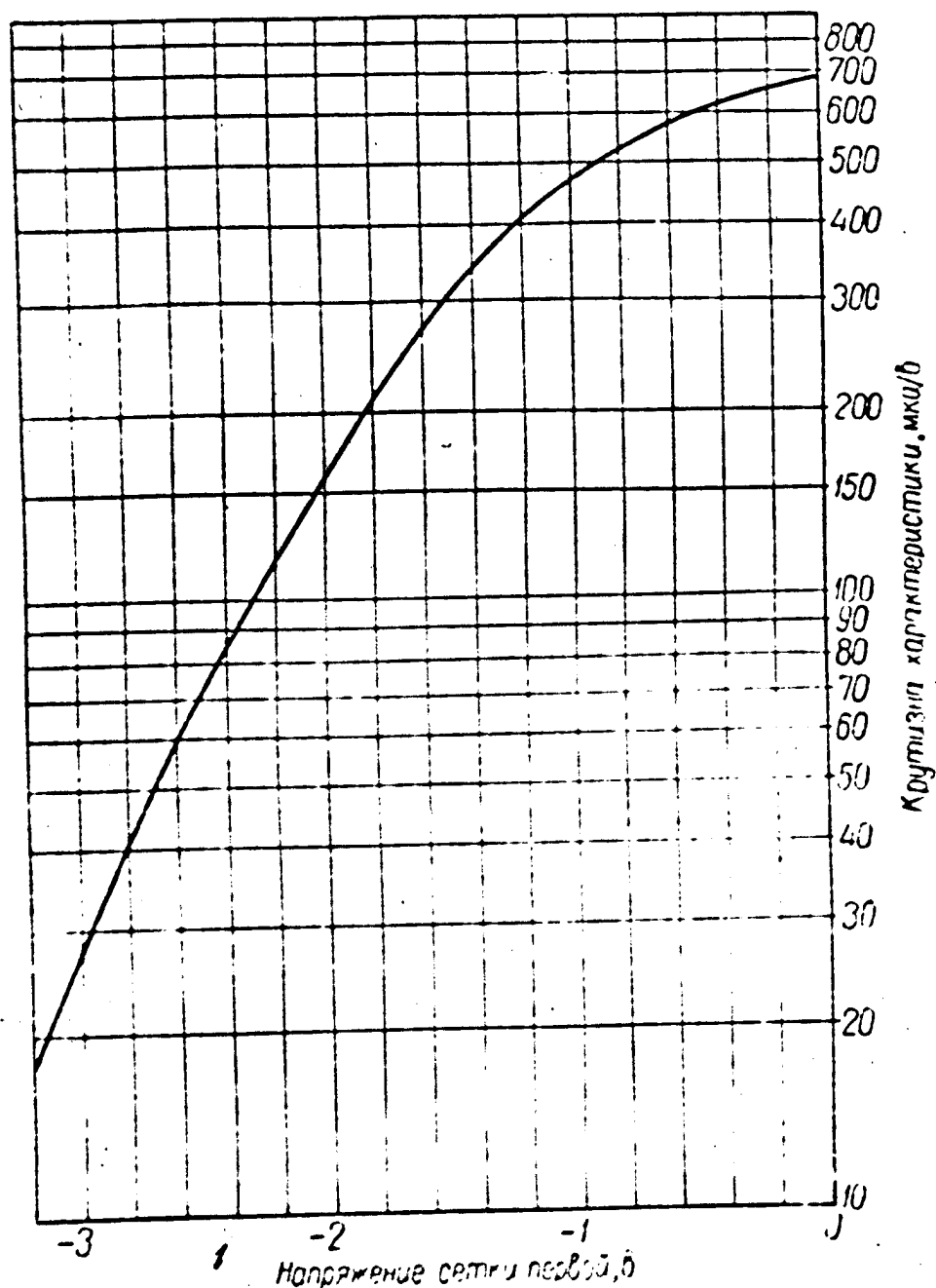
1I2P

* * * * *

Average Transconductance Curve as a Function of First-Grid Voltage

Filament voltage, 1.2 v; plate voltage, 60 v; second and fourth grid voltages, 45 v; third-grid voltage, 0 v.

1) First-grid voltage, v; 2) transconductance, ma/v.



(Above material published April 1959, PKB, G-8)

TRIODE-HEXODE

1I2P

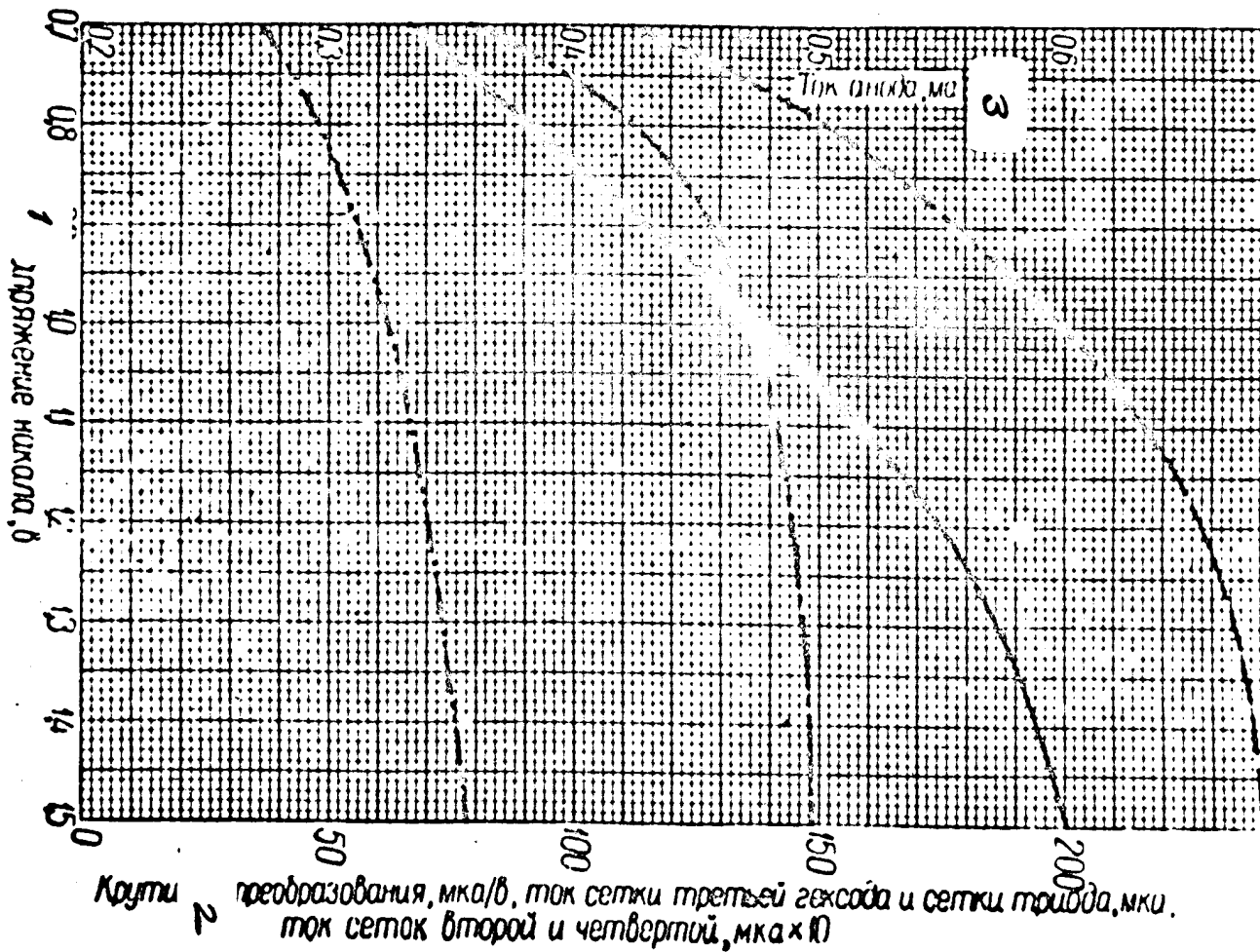
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Average Dynamic Characteristics

(As a function of filament voltage): — hexode plate current; — — — currents for hexode third grid and triode grid; - - - - hexode second and fourth grid currents; - - - - conversion transconductance.

Triode plate voltage, 60 v; hexode plate voltage, 60 v; hexode second and fourth grid voltages, 45 v; voltage on third grid, connected to triode grid, 8 v (eff); resistance in circuit of third grid connected to triode grid, 47 kohm.

1) Filament voltage, v; 2) conversion transconductance $\mu\text{a/v}$, current for hexode third grid and triode grid, μa , second and fourth grid currents, $\mu\text{a} \times 10$; 3) plate current, ma.



(Above material published April 1959, PKB, G-9)

TRIODE-HEXODE

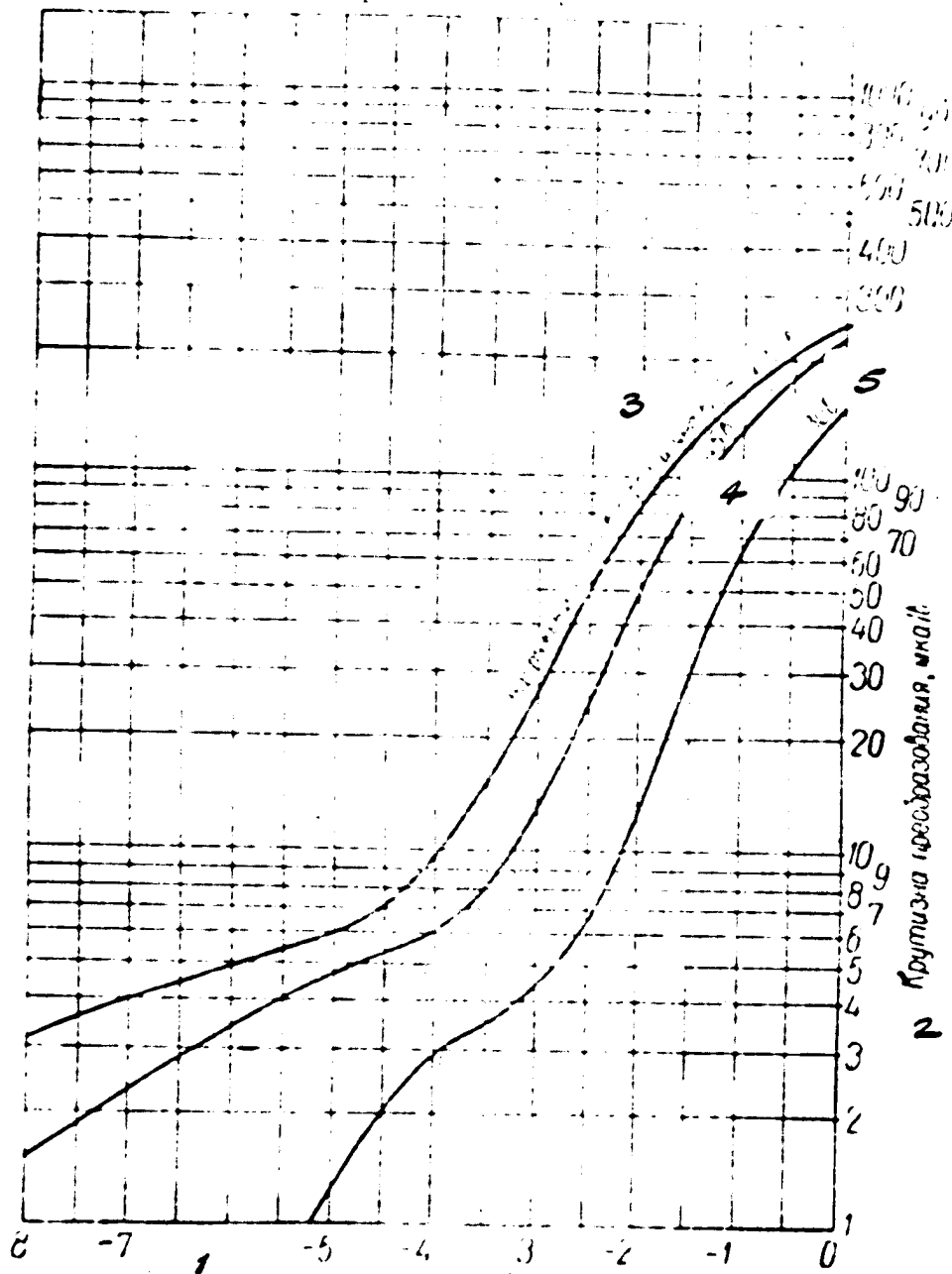
112P

* * * * *

Average Dynamic Characteristics for Conversion Transconductance as a Function of First-Grid Voltage

Filament voltage, 1.2 v; triode plate voltage, 60 v; hexode plate voltage, 60 v; voltage for first grid, connected to triode grid, 8 v (eff); resistance in circuit of third grid, connected to triode grid, 47 kohm.

- 1) Hexode first-grid voltage, v; 2) conversion transconductance, $\mu\text{a/v}$; 3) second and fourth grid voltages, 60 v; 4) 45 v; 5) 30 v.



(Above material published April 1959, PKB, G-10)

TRIODE-HEXODE

1I2P

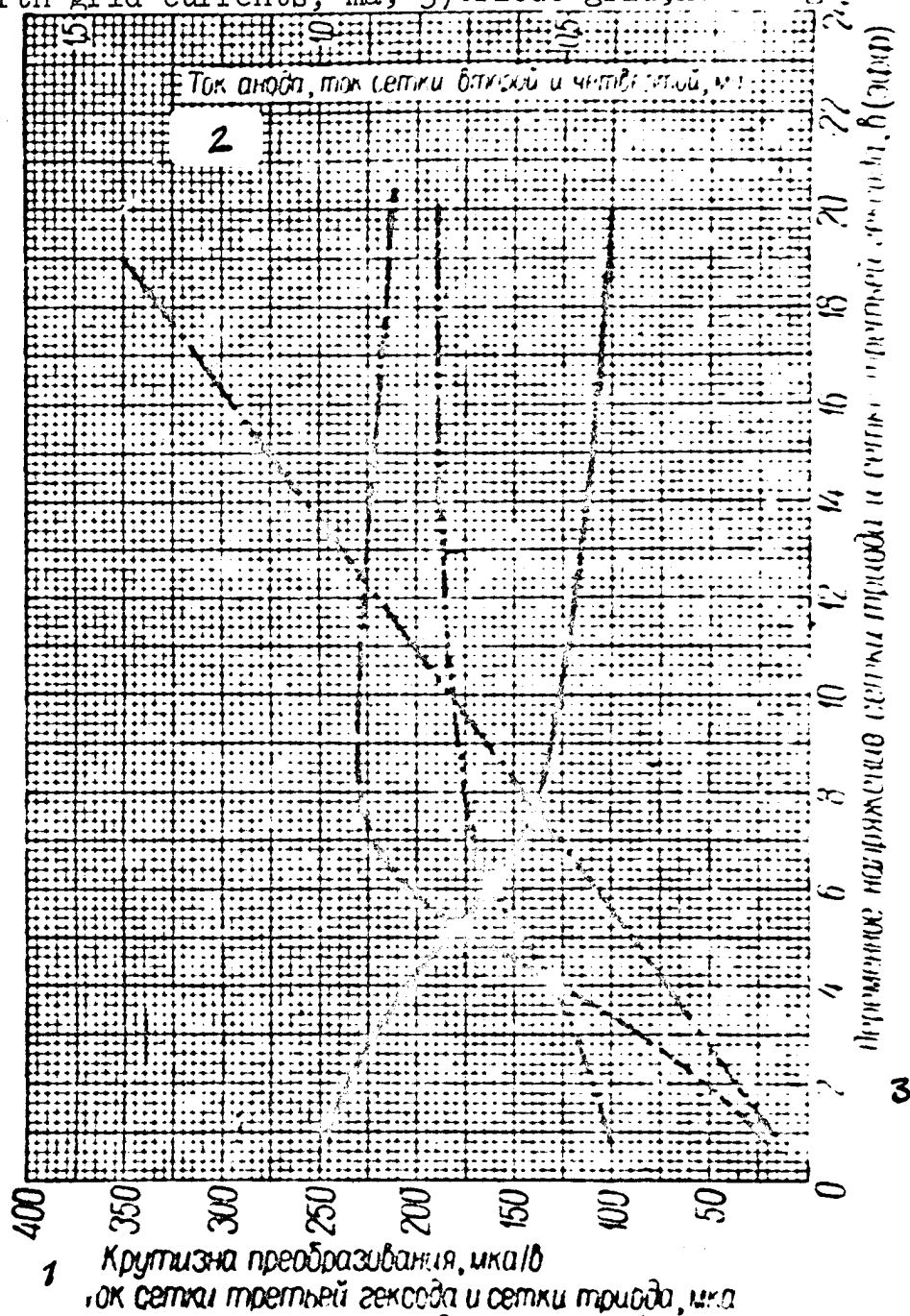
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Average Dynamic Characteristics

(As a function of effective oscillation voltage): — hexode plate current; - - - - current for third grid connected to triode grid; - · - · - hexode second and fourth grid currents; - - - - conversion transconductance.

Filament voltage, 1.2 v; triode plate voltage, 60 v; hexode plate voltage, 60 v; hexode second and fourth grid voltages, 45 v; resistance in circuit of hexode third grid, connected to triode grid, 47 kohm.

1) Conversion transconductance, $\mu\text{a/v}$; current for hexode third grid and triode grid, μa ; 2) plate current, second and fourth grid currents, ma ; 3) triode grid, hexode grid AC, $\text{v}(\text{eff})$.



REMOTE-CUTOFF RADIOFREQUENCY PENTODE

1K1P

* * * * *

Basic function — high-frequency voltage amplification.

Structure — glass miniature.

Basic Data

Cathode — oxide-coated filament-type

Maximum height

60 mm

Maximum diameter

19 mm

Number of pins

7

Dimension drawing — 5P

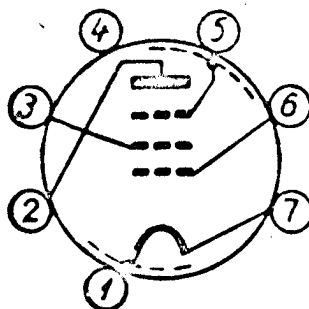
Connection diagram for electrodes and pins

1 — катод (минус
нити накала),
сетка третья
и экран

2 — анод

3 — сетка вторая

4 — не подключен



5 — катод (минус
нити накала),
сетка третья и
экран

6 — сетка первая

7 — катод (плюс
нити накала)

1) Cathode (minus side of filament), third grid, and shield;
2) plate; 3) screen; 4) not connected; 5) cathode (negative side of filament), suppressor, and shield; 6) first grid; 7) cathode (positive side of filament).

Electrical Data

Filament voltage (=)

1.2 v

Filament current

 60 ± 7 ma

Plate voltage (=)

90 v

Screen voltage (=)

67.5 v

First-grid voltage (=)

0 v

Plate current

 3.5 ± 1.2 ma

Screen current

 1.2 ± 0.65 ma

Transconductance

 0.89 ma/v

Transconductance with filament voltage
of 0.95 v

no less than 0.57 ma/v

Transconductance with first-grid voltage
of minus 16 v

from 0.001 to 0.05 ma/v

Internal resistance*

no less than 0.17 megohm

First-grid back current**

no more than 1 μ a

*For plate and screen voltages of 45 v.

**For screen voltage of 90 v and first-grid voltage of minus 2 v.

← Change introduced

(Above material published April 1959, PKB, Sheet 1)

REMOTE-CUTOFF RADIOFREQUENCY PENTODE

1K1P

* * * * *

Service life 1000 hours
Criterion for service life:
transconductance no less than 0.54 ma/v

Interelectrode Capacitances

Input $3.5 \pm 0.8 \mu\mu\text{f}$
Output $7.5 \pm 2.2 \mu\mu\text{f}$
Transfer no more than 0.01 $\mu\mu\text{f}$

Maximum Permissible Operating Data

Maximum filament voltage (=) 1.4 v
Minimum filament voltage (=) 0.95 v
Maximum plate voltage (=) 100 v
Maximum screen voltage (=) 75 v
Maximum cathode current 6.5 ma
Maximum resistance in first-grid circuit 1 megohm

(Above material published April 1959, PKB, Sheet 1)

REMOTE-CUTOFF RADIOFREQUENCY PENTODE

1K1P

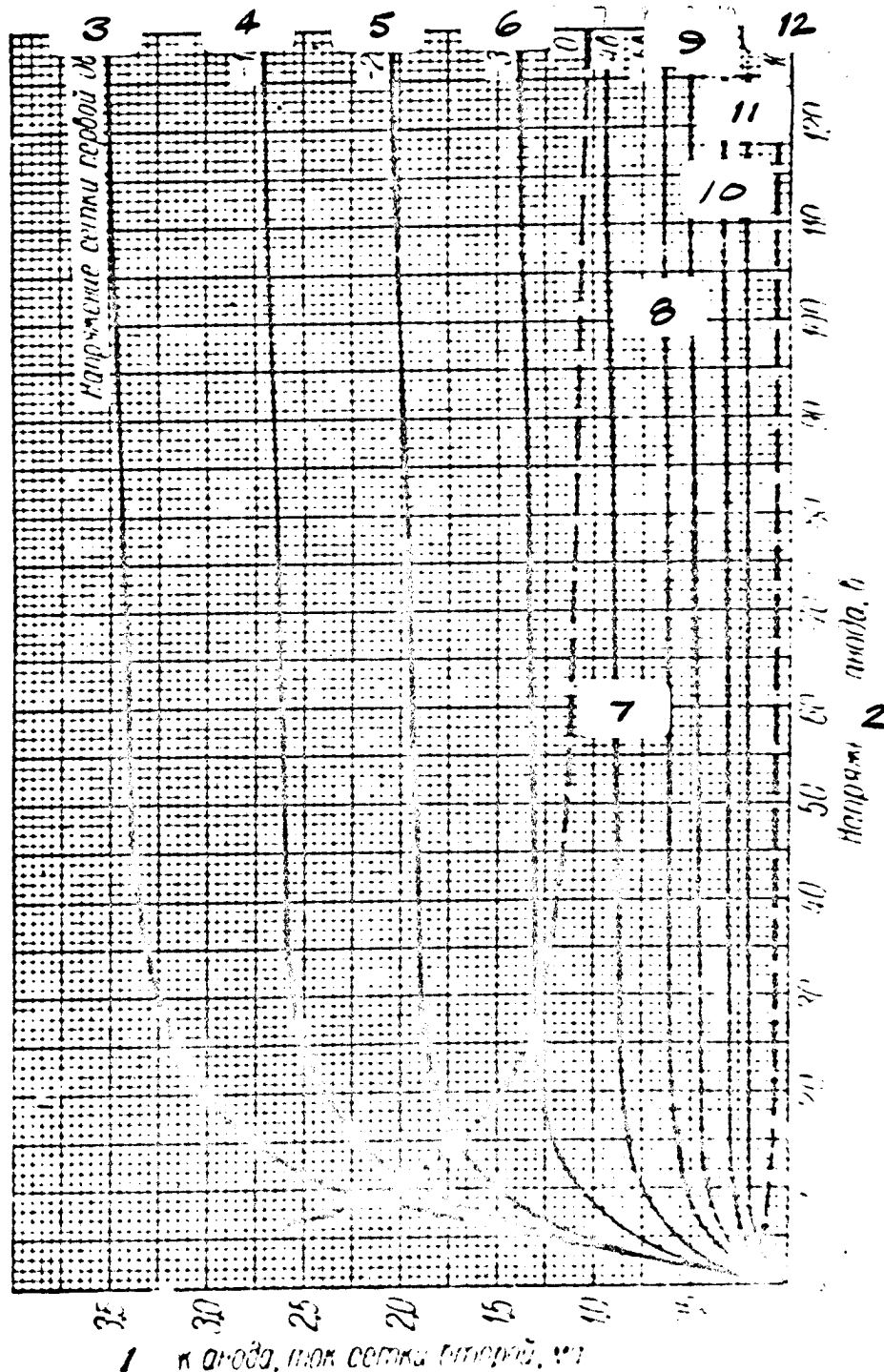
* * * * *

Average Characteristics

— Plate; ----- grid-plate (for screen).

Filament voltage, 1.2 v; screen voltage, 67.5 v.

- 1) Plate current, screen current, ma; 2) plate voltage, v;
 3) first-grid voltage, 0 v; 4) -1 v; 5) -2 v; 6) -3 v; 7)
 -4 v; 8) -5 v; 9) -6 v; 10) -8 v; 11) -10 v; 12) -10 v.



REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

1K1P

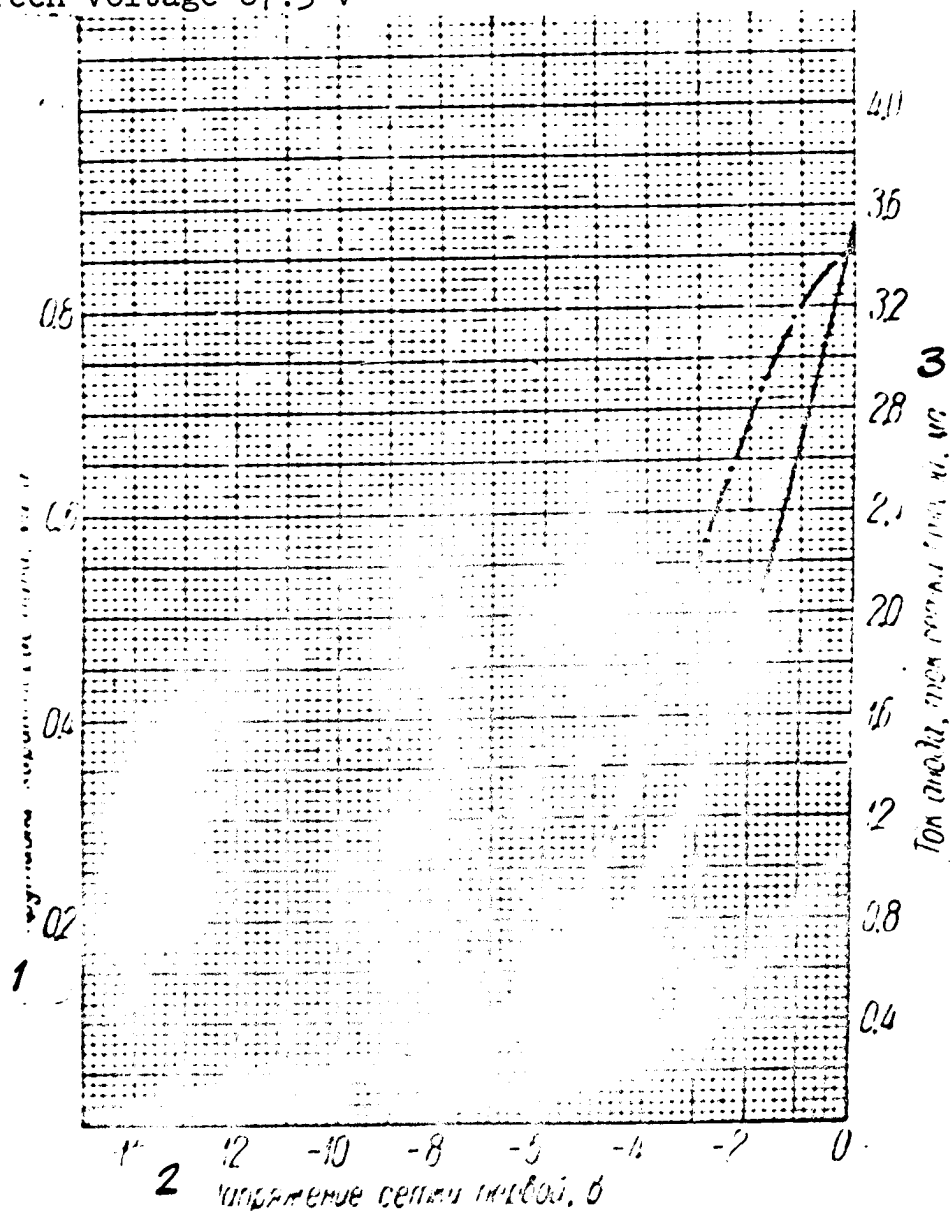
Average Characteristics

————— plate-grid
 - - - - - grid (for screen grid)
 - · - · - · transconductance

Filament voltage, 1.2 v

Plate voltage, 90 v

Screen voltage 67.5 v



1) Transconductance, ma/v; 2) first-grid voltage, v; 3) plate current, screen-grid current, ma.

(Above material published April 1959, PKB, G-2)

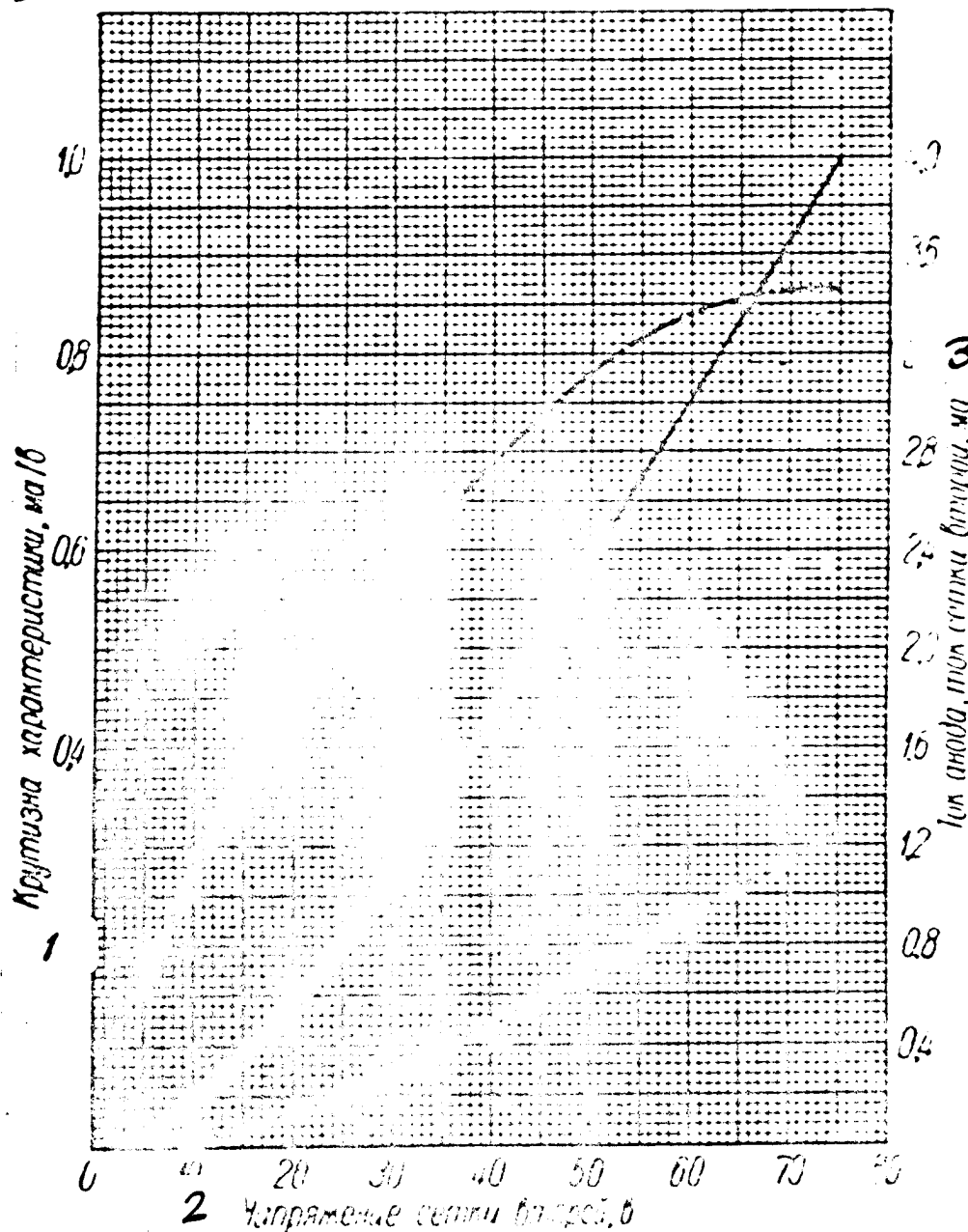
REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

1K1P

Average Characteristics

—— plate-grid
 ----- grid
 - - - - - transconductance

Filament voltage, 1.2 v
 Plate voltage, 90 v
 First-grid voltage, 0 v.



1) Mutual conductance, ma/v; 2) screen voltage, v; 3) plate current, screen current, ma.

(Above material published April 1959, PKB, G-3)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

1K2P

Basic function RF voltage amplification.Structure glass miniature.General Data

Cathode — oxide-coated filament-type

Maximum height

60 mm ←

Maximum diameter

19 mm

Weight

about 11 grams

Number of pins

7

Dimension drawing — 5P

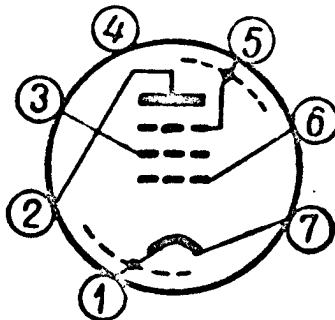
Connection Diagram for Electrodes and Pins

1 — катод (минус
нити накала).
сетка третья и
экран

2 — анод

3 — сетка вторая

4 — не подключен



5 — катод (минус
нити накала).
сетка третья и
экран

6 — сетка первая

7 — катод (плюс
нити накала)

1) Cathode (negative side of filament), third grid, and shield;
2) plate; 3) screen grid; 4) not connected; 5) cathode (negative side of filament), third grid, and shield; 6) first grid; 7) cathode (positive side of filament).

Electrical Data

Filament voltage (=)

1.2 v

Filament current

 30 ± 3 ma

Plate voltage (=)

60 v

Screen voltage (=)

45 v

First-grid voltage (=)

0 v

Plate current

 1.35 ± 0.5 ma

Screen current

 $0.5 - 0.15$ ma

Transconductance

0.7 ma/v

Transconductance with filament voltage
of 0.95 v

no less than 0.32 ma/v

Transconductance with first-grid voltage
of minus 8 v

no less than 2 μ a/v ←

Internal resistance

1.5 Megohm

← Change introduced

(Above material published April 1959, PKB, Sheet 1)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

1K2P

Input resistance at a frequency of 30 Mc	about 60 kohm
Input resistance at a frequency of 60 Mc	about 20 kohm
Input resistance at a frequency of 100 Mc	about 12 kohm
Resonant frequency	no less than 500 Mc
Maximum oscillation frequency in Lecher circuit	no less than 100 Mc
Equivalent internal noise resistance under static supply conditions	about 12 Kohm
Service life	1000 hours
Service life criterion: transconductance	no less than 0.32 ma/v

Interelectrode Capacitances

Input	about 3 μ f
Output	about 4.9 μ f
Transfer	no more than 0.01 μ f

Maximum Permissible Operating Data

Maximum filament voltage (=)	1.4 v
Minimum filament voltage (=)	0.9 v
Maximum power-supply voltage for plate and screen circuits (=)	250 v
Maximum plate voltage (=)	90 v
Maximum screen voltage (=)	75 v
Maximum cathode current	3.5 ma
Maximum plate dissipation	0.3 watt
Maximum first-grid circuit resistance	3 Megohm

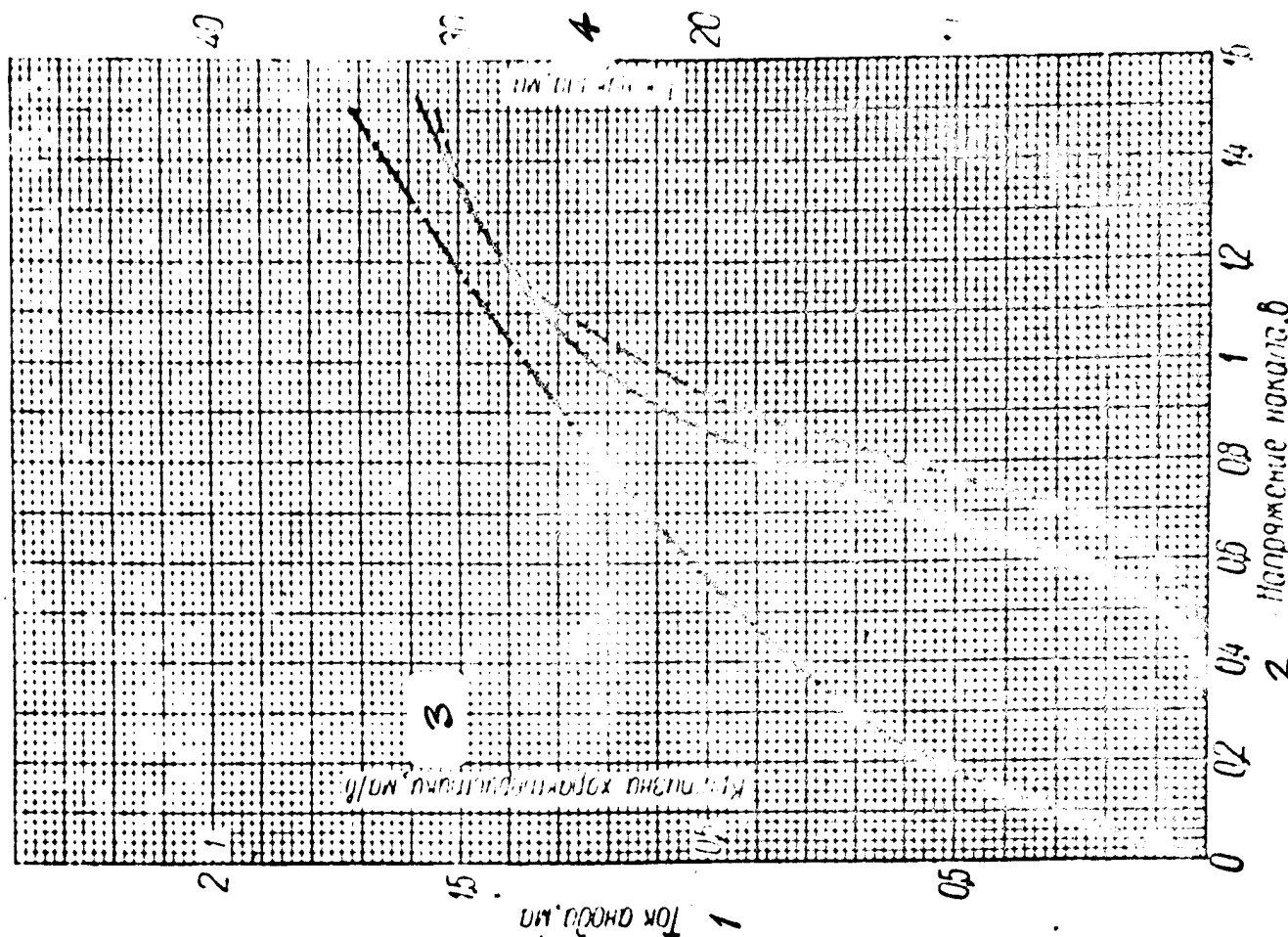
(Above material published April 1959, PKB, Sheet 1)

Average Characteristics

(As a function of filament voltage)

———— Plate current
 - - - - - Filament current
 - - - - - Transconductance

Plate voltage, 60 v; screen voltage, 45 v; first-grid voltage, 0 v.



1) Plate current, ma; 2) filament voltage, v; 3) mutual conductance, ma/v; 4) filament current, ma.

(Above material published April 1959, PKB, G-1)

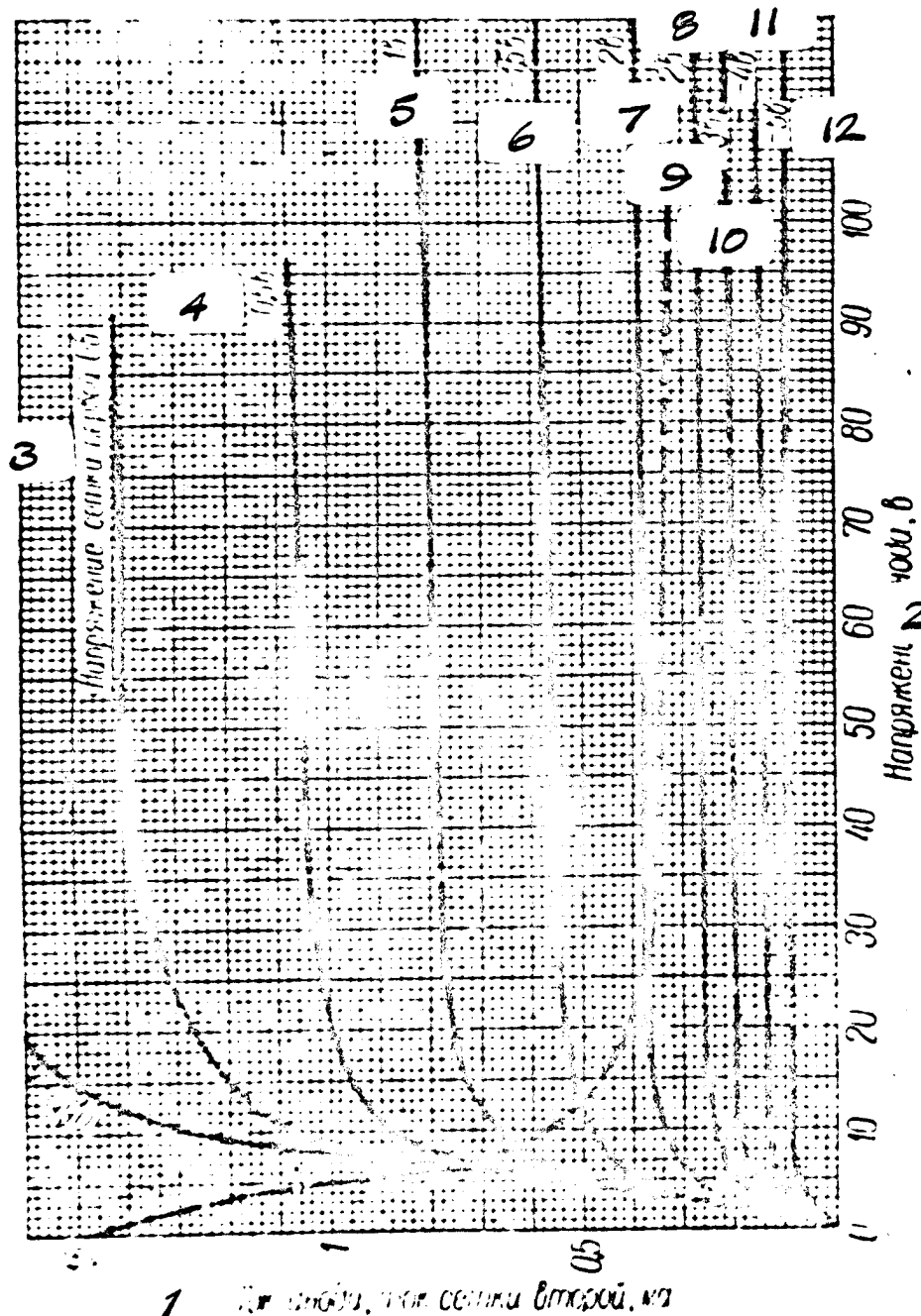
REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

1K2P

Average Characteristics

—— Plate
 ----- Grid-plate (for screen grid)

Filament voltage, 1.2 v
 Screen voltage, 45 v



1) Plate current, screen current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) -2 v; 8) -2.5 v; 9) 0 v; 10) -3 v; 11) -4 v; 12) -5 v.

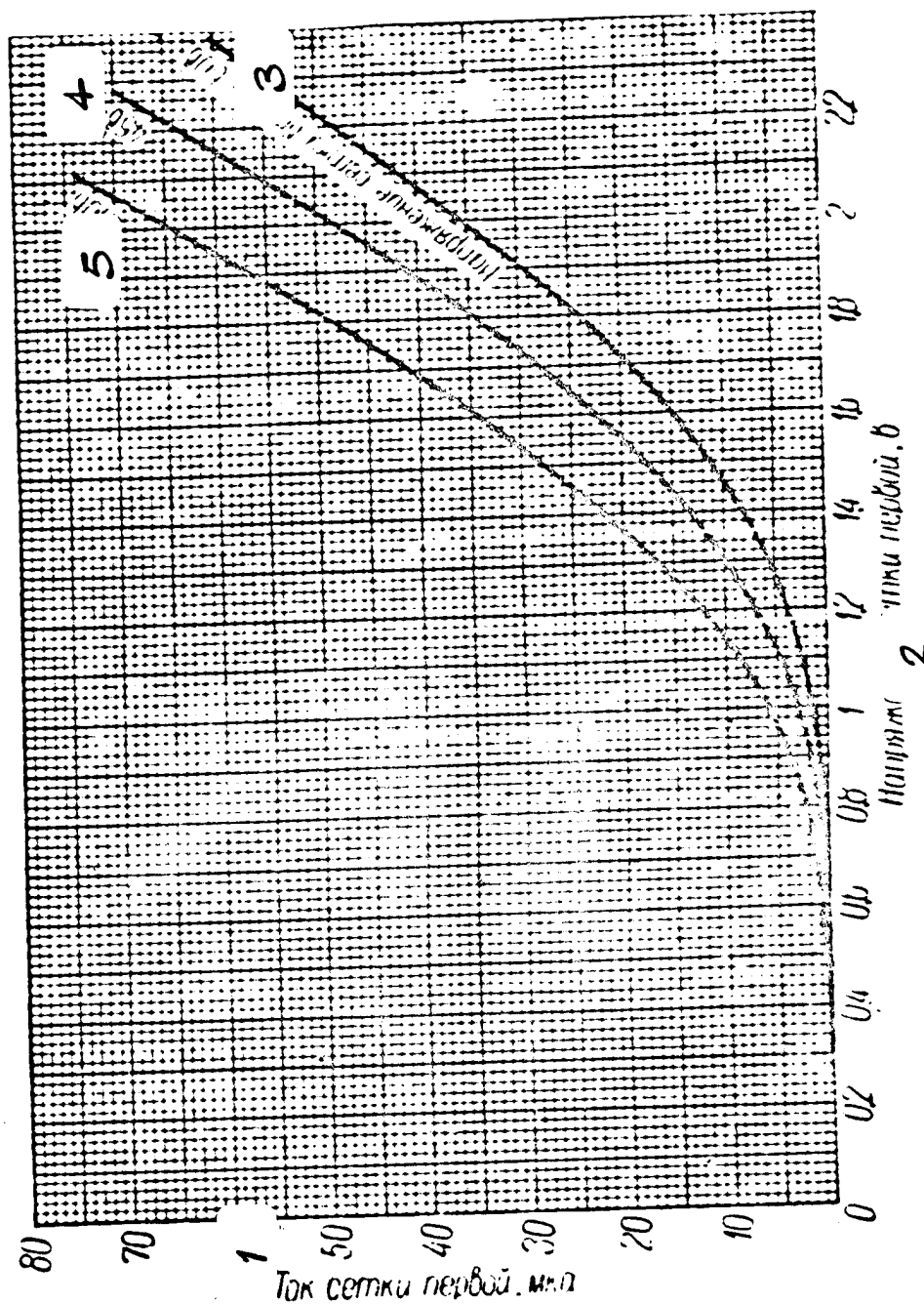
(Above material published April 1959, PKB, G-2)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

1K2P

Average Grid Characteristics

Filament voltage, 1.2 v.
Plate voltage, 60 v.



1) First-grid current, μA ; 2) first-grid voltage, v; 3) screen voltage, 60 v; 4) 45 v; 5) 30 v.

(Above material published April 1959, PKB, G-3)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

1K2P

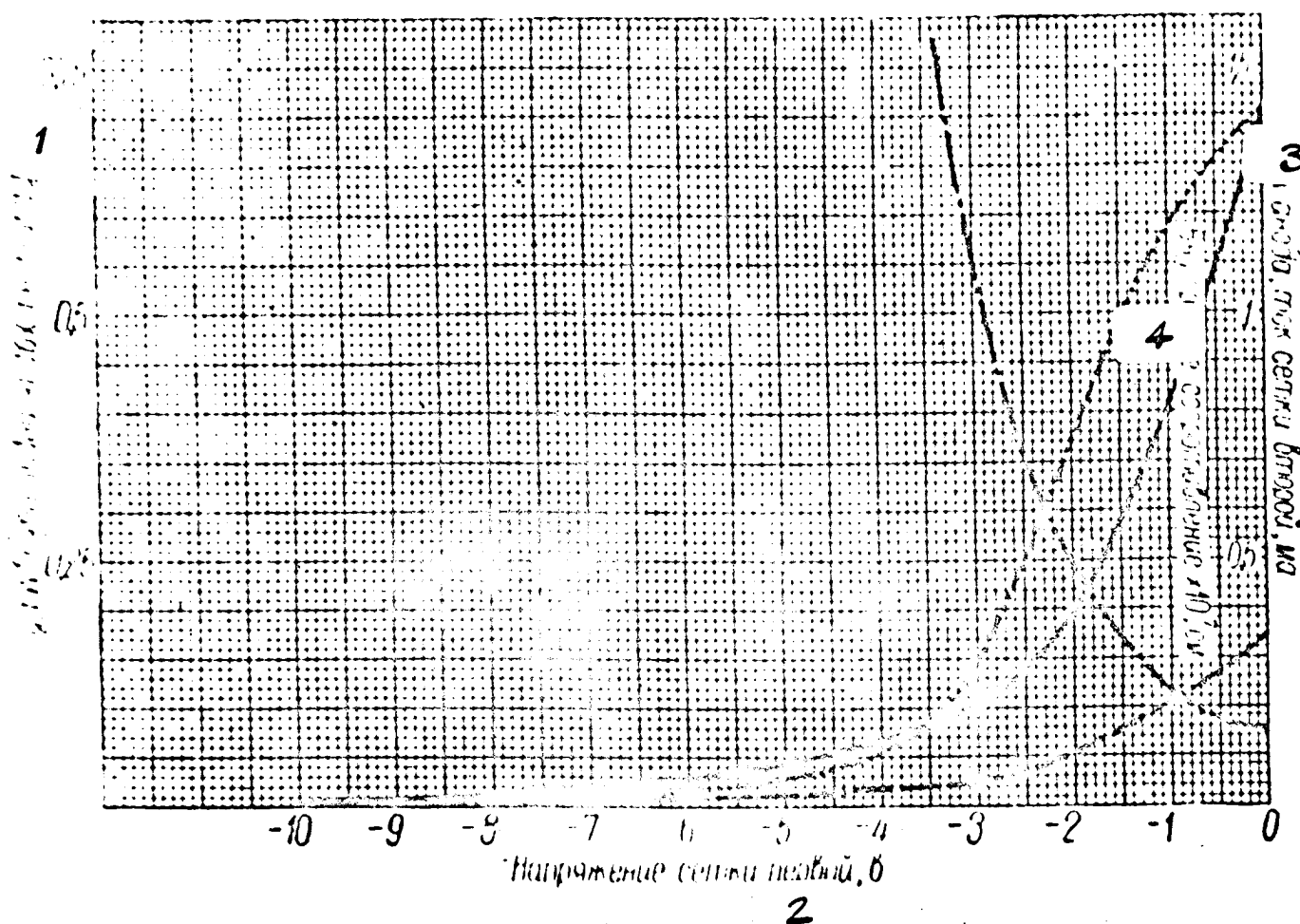
Average Characteristics

- Plate-grid
 - - - - - Grid (for screen grid)
 Internal resistance
 Mutual conductance

Filament voltage, 1.2 v.

Plate voltage, 60 v.

Screen voltage, 45 v.



1) Mutual conductance, ma/v; 2) first-grid voltage, v; 3) plate current, screen current, ma; 4) internal resistance, $\times 10^7$, ohms.

(Above material published April 1959, PKB, G-4)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

1K2P

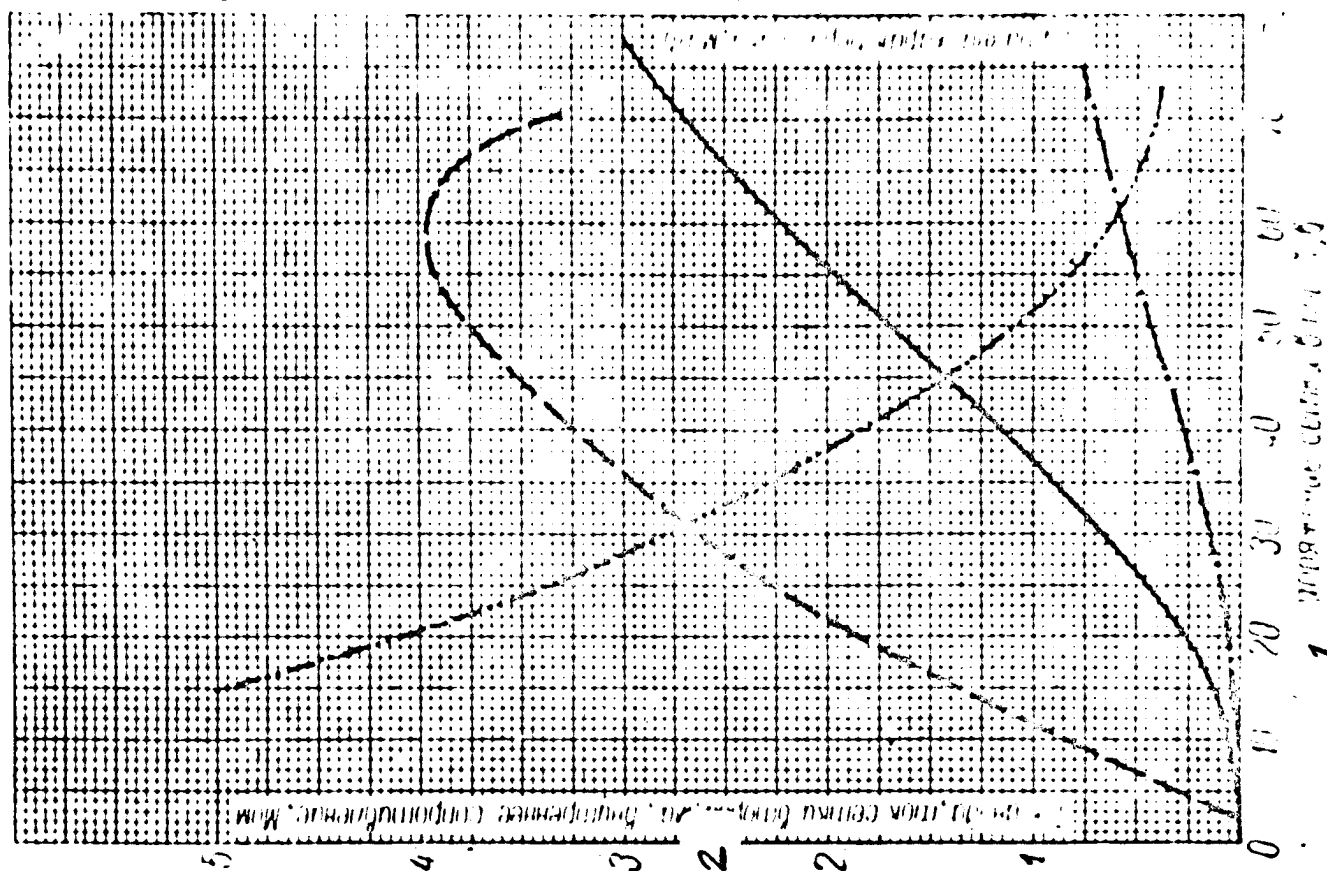
Average Characteristics

— Plate-grid
 - - - - - Grid
 - - - - - Mutual conductance
 - - - - - Internal resistance

Filament voltage, 1.2 v.

Plate voltage, 60 v.

First-grid voltage, 0 v.



1) First-grid voltage, v; 2) plate current, screen current, ma, internal resistance, megohms; 3) mutual conductance, ma/v.

(Above material published April 1959, PKB, G-5)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

1K2P

Average Characteristics

(As a function of filament voltage)

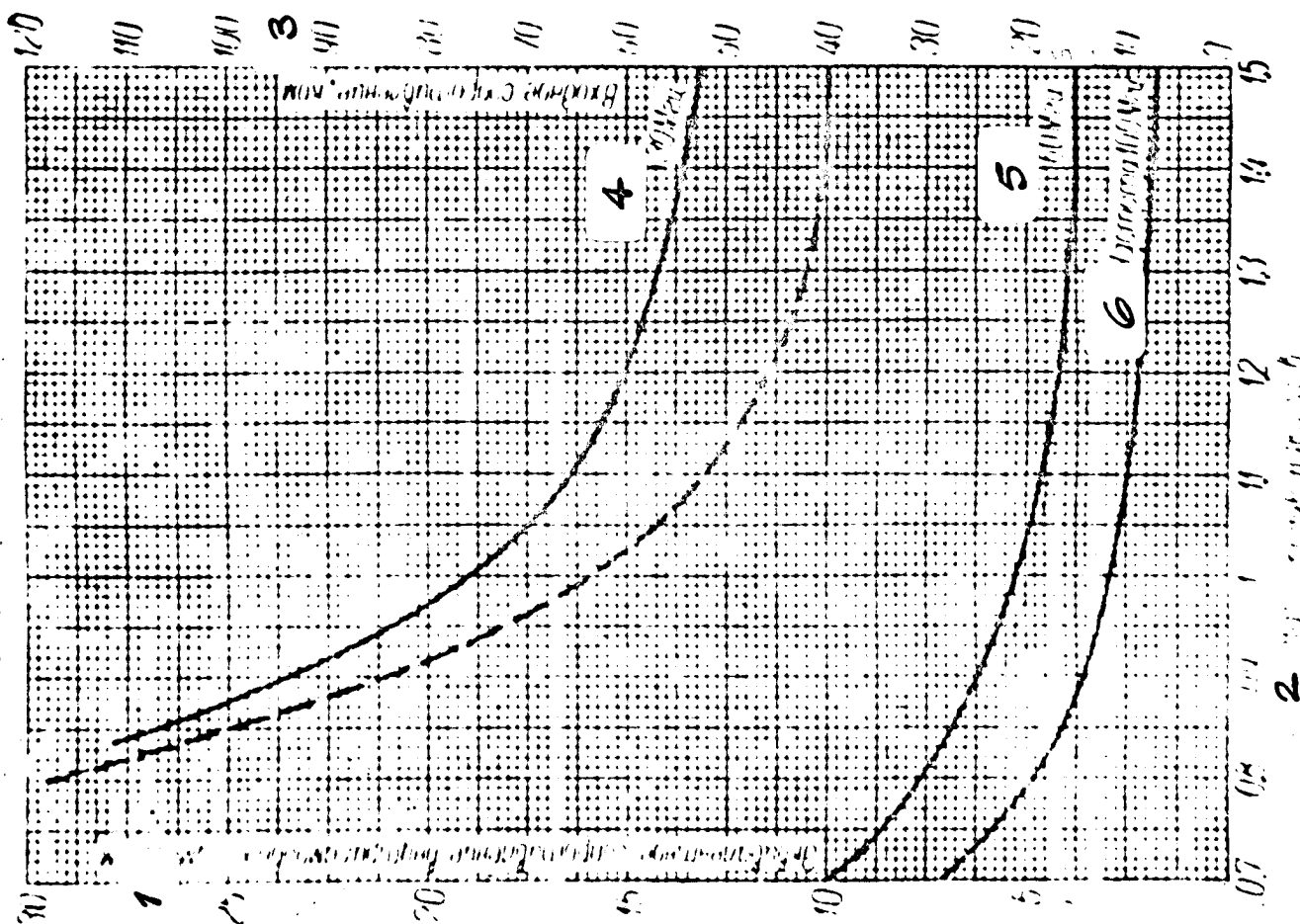
————— Input resistance

----- Equivalent internal noise resistance

Plate voltage, 60 v.

Screen voltage, 45 v.

First-grid voltage, 0 v.



1) Equivalent internal noise resistance, kohm; 2) filament voltage, v; 3) input resistance, kohm; 4) 30 Mc; 5) 60 Mc; 6) frequency of 100 Mc.

(Above material published April 1959, PKB, G-6)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

1K2P

Average Characteristics

(As a function of plate voltage)

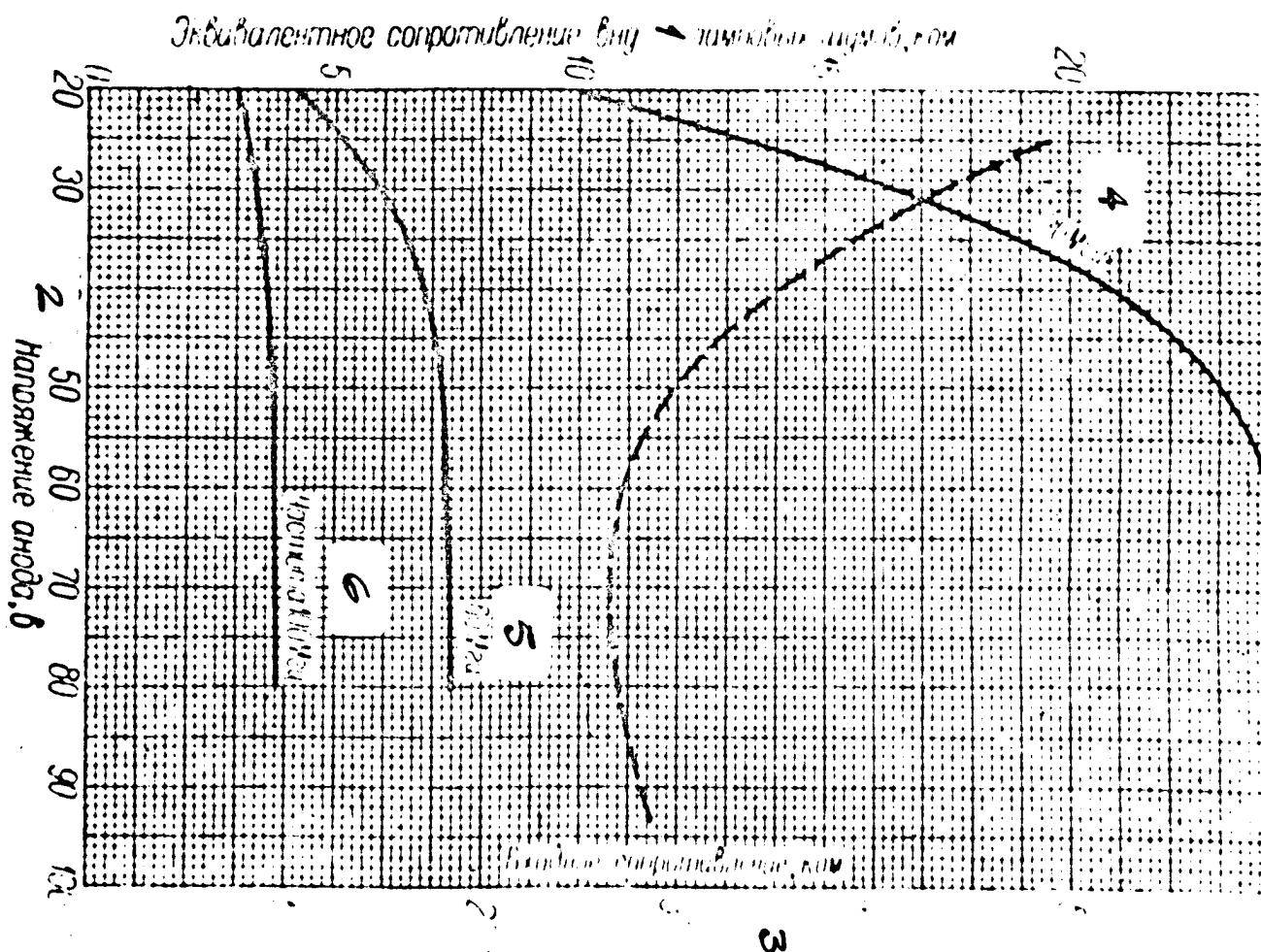
———— Input resistance

----- Equivalent internal noise resistance

Filament voltage, 1.2 v.

Screen voltage, 45 v.

First-grid voltage, 0 v.



- 1) Equivalent internal noise resistance, kohm; 2) plate voltage, v;
 3) input resistance, kohm; 4) 30 Mc; 5) 60 Mc; 6) frequency of
 100 Mc.

(Above material published April 1959, PKB, G-7)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

1K2P

Average Characteristics

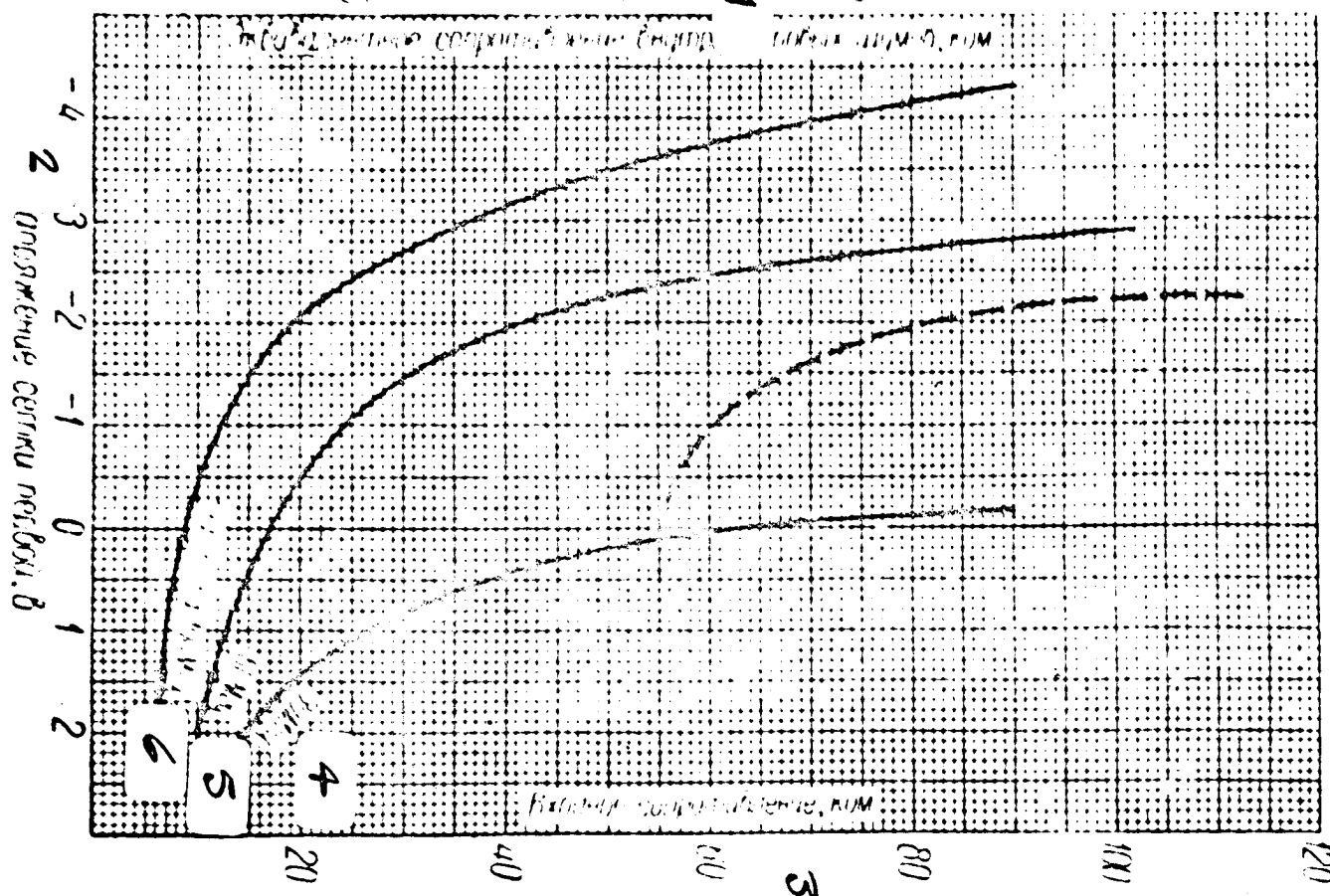
(As a function of first-grid voltage)

———— Input resistance
 ----- Equivalent internal noise resistance

Filament voltage, 1.2 v.

Plate voltage, 60 v.

Screen voltage, 45 v.



- 1) Equivalent internal tube noise, kohm; 2) first-grid voltage, v;
 3) input resistance, kohm; 4) 40 Mc; 5) 60 Mc; 6) frequency of
 100 Mc.

(Above material published April 1959, PKB, G-8)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

1K2P

Average Characteristics

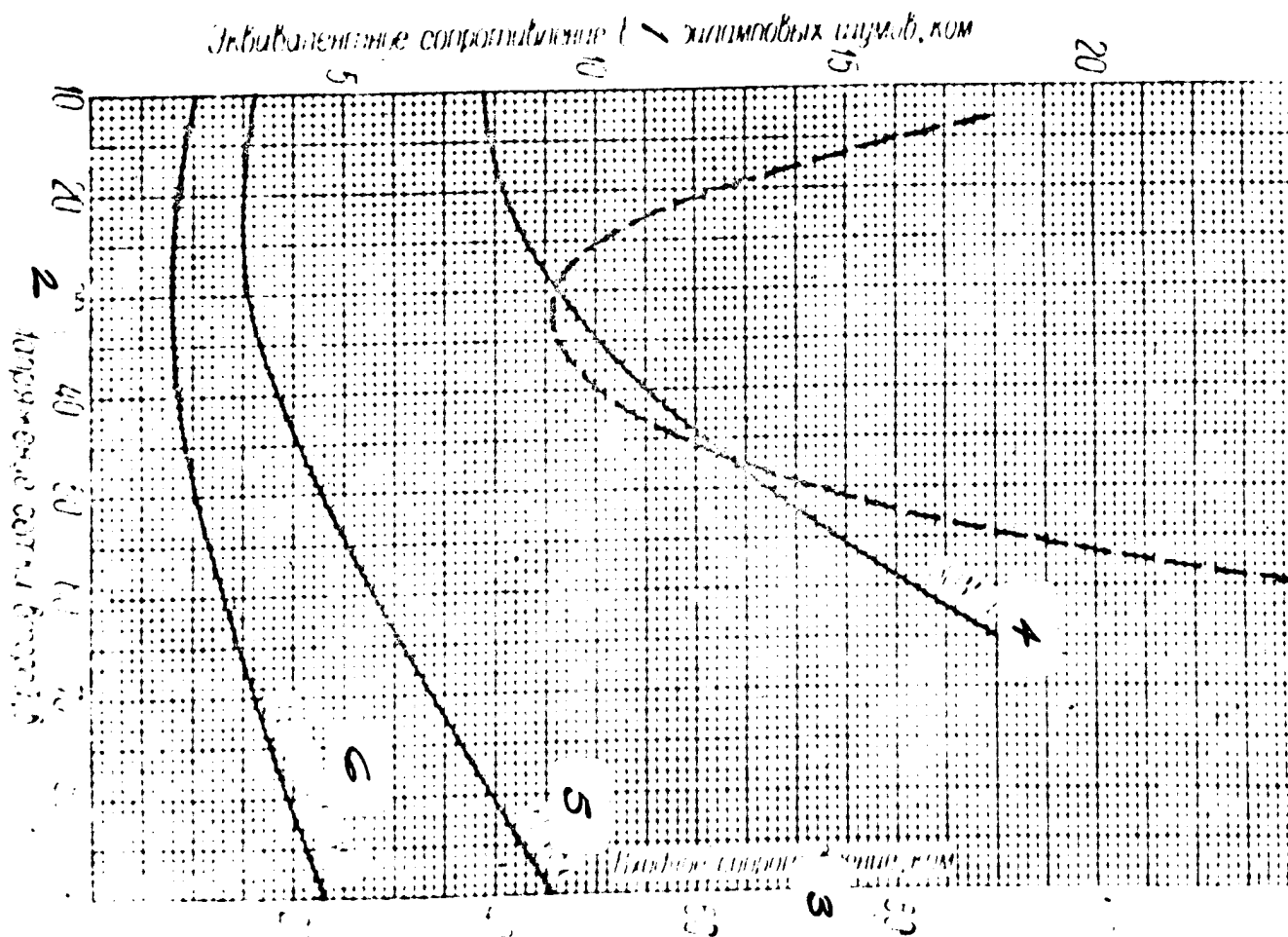
(As a function of screen voltage)

———— Input resistance
 ----- Equivalent internal tube noise

Filament voltage, 1.2 v.

Plate voltage, 60 v.

First-grid voltage, 0 v.



- 1) Equivalent internal tube noise, kohm; 2) screen voltage, v;
 3) input resistance, kohm; 4) 30 Mc; 5) 60 Mc; 6) frequency of 100 Mc.

(Above material published April 1959, PKB)

TWIN POWER TRIODE

1N3S

Basic function audio-frequency power amplification.Structure glass.Basic Data

Cathode - Oxide-coated filament-type

Maximum height

78 mm

Maximum diameter

32.8 mm

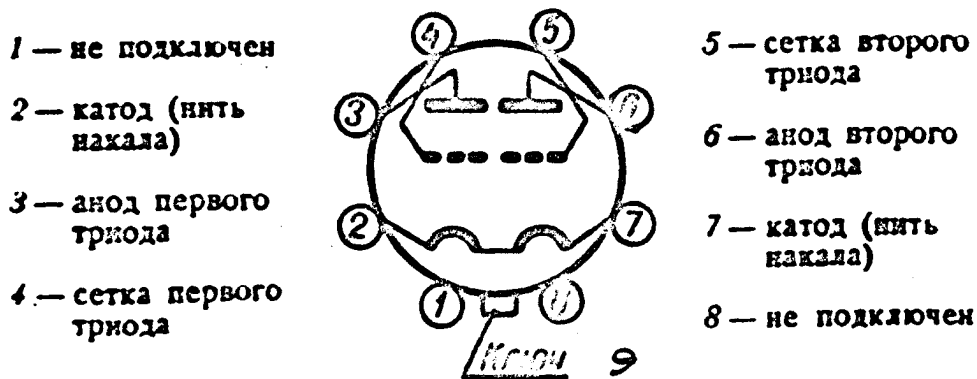
Maximum weight

40 grams

Base - Octal Ts-4-8A

Dimension drawing - 8S

Connection Diagram for Electrodes and Pins



1) Not connected; 2) cathode (heater); 3) plate of first triode;
 4) grid of first triode; 5) grid of second triode; 6) plate of
 second triode; 7) cathode (filament); 8) not connected; 9) Key.

Electrical Data

Filament voltage (=)	1.2 v
Filament current	120 ± 12 ma
Plate voltage (=)	120 v
Grid voltage (=)	-5.5 v
Plate current for each triode	2.5 ± 1.2 ma
Amplification factor for each triode	11
Output power*	no less than 0.4 watt
Nonlinear distortion**	no more than 10%
Grid back current ***	no more than 1 μa

*With alternating voltage between the grids of 22 v (eff) and resistance between the plates of 7 kohm.

**For output power of 1.5 watt and resistance between the plates of 7 kohm.

***With both triodes connected in parallel and a resistance in the grid circuit of 0.1 megohm.

(Above material published April 1959, PKB, Sheet 1)

TWIN OUTPUT TRIODE

1N3S

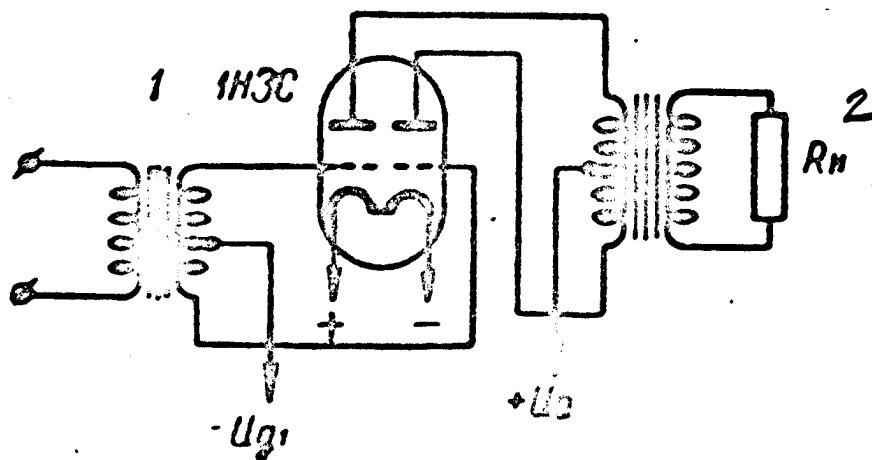
Grid insulation resistance	no less than 20 Megohm
Plate insulation resistance	no less than 20 Megohm
Service life	500 hours
Service-life criterion:	
Output power	no less than 0.32 watt ←

Maximum Permissible Operating Data

Maximum filament voltage (=)	1.32 v ←
Minimum filament voltage (=)	1.08 v ←
Maximum plate current (=)	150 v
Maximum plate dissipation	1 watt

Typical Operation

Push-Pull Circuit, Using a Single Tube*

Class B₂1) 1N3S; 2) R_L.

	No. 1	No. 2
Plate voltage (=), v	90	120
Negative grid voltage (=), v	3.5	5.5
Alternating voltage between grids, v (eff)	22	22
No-signal plate current, ma	4	4
Plate current, ma	12	11
Equivalent plate load resistance kohm**	18	27
Output power, watts	0.40	0.55
Nonlinear distortion, %	2.5	2.5

*Data shown for two triodes.

**Between the plates.

← Addition and change introduced.

(Above material published April 1959, PKB, Sheet 1)

TWIN OUTPUT TRIODE

1N3S

Class C₂ (quiescent condition)

	No. 1	No. 2	No. 3
Plate voltage (=), v	90	120	140
Negative grid voltage (=), v	6	10	11
Alternating voltage between grids, v (eff)	26	33	35
Plate current in absence of signal, ma	0	0	0
Plate current, ma	11	11	12
Equivalent resistance of plate load, kohm*	18	27	31
Output power, watts	0.5	0.7	0.9
Nonlinear distortion, %	7	9	8

*Between the plates.

Push-pull circuit using two tubes*(triodes of each tube connected in parallel)

Class B₂

	No. 1	No. 2
Plate voltage (=), v	120	140
Negative grid voltage (=), v	7	8
Alternating voltage between grids, v (eff)	30	31
Plate current in absence of signal, ma	4	5
Plate current, ma	22	22
Equivalent resistance of plate load, kohm**	15	15
Output power, watts	1.3	1.6
Nonlinear distortion, %	4	2.5

*Data shown for two tubes.

**Between the plates.

TWIN OUTPUT TRIODE

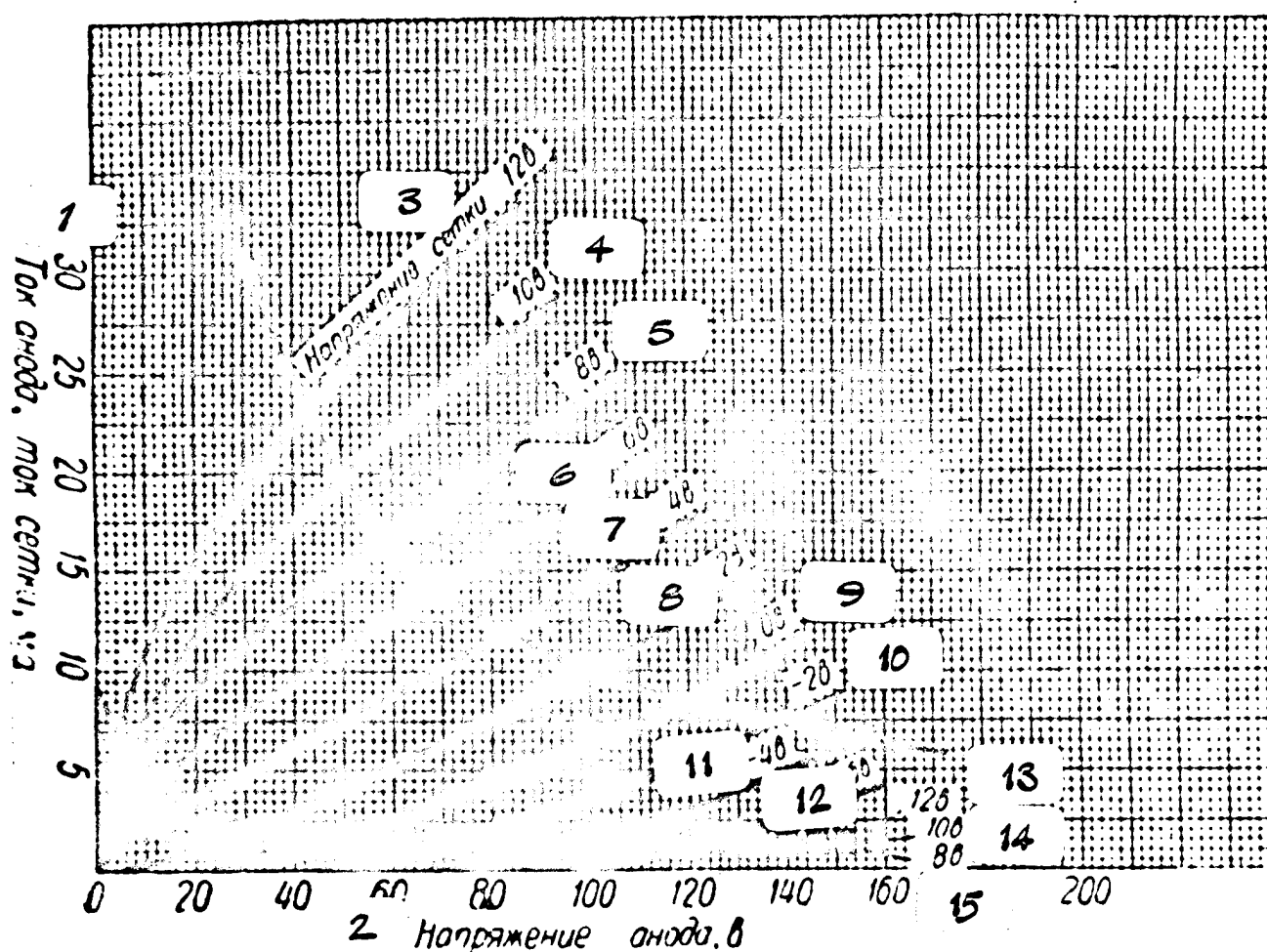
1N3S

Average Characteristics

(For each triode)

— Plate
 - - - - - Grid-plate
 - - Maximum permissible plate dissipation

Filament voltage, 1.2 v.



1) Plate current, grid current, ma; 2) plate voltage, v; 3) grid voltage, 12 v; 4) 10 v; 5) 8 v; 6) 6 v; 7) 4 v; 8) 2 v; 9) 0 v; 10) -2 v; 11) -4 v; 12) -6 v; 13) 12 v; 14) 10 v; 15) 8 v.

(Above material published April 1959, PKB, G-1)

TWIN POWER DIODE

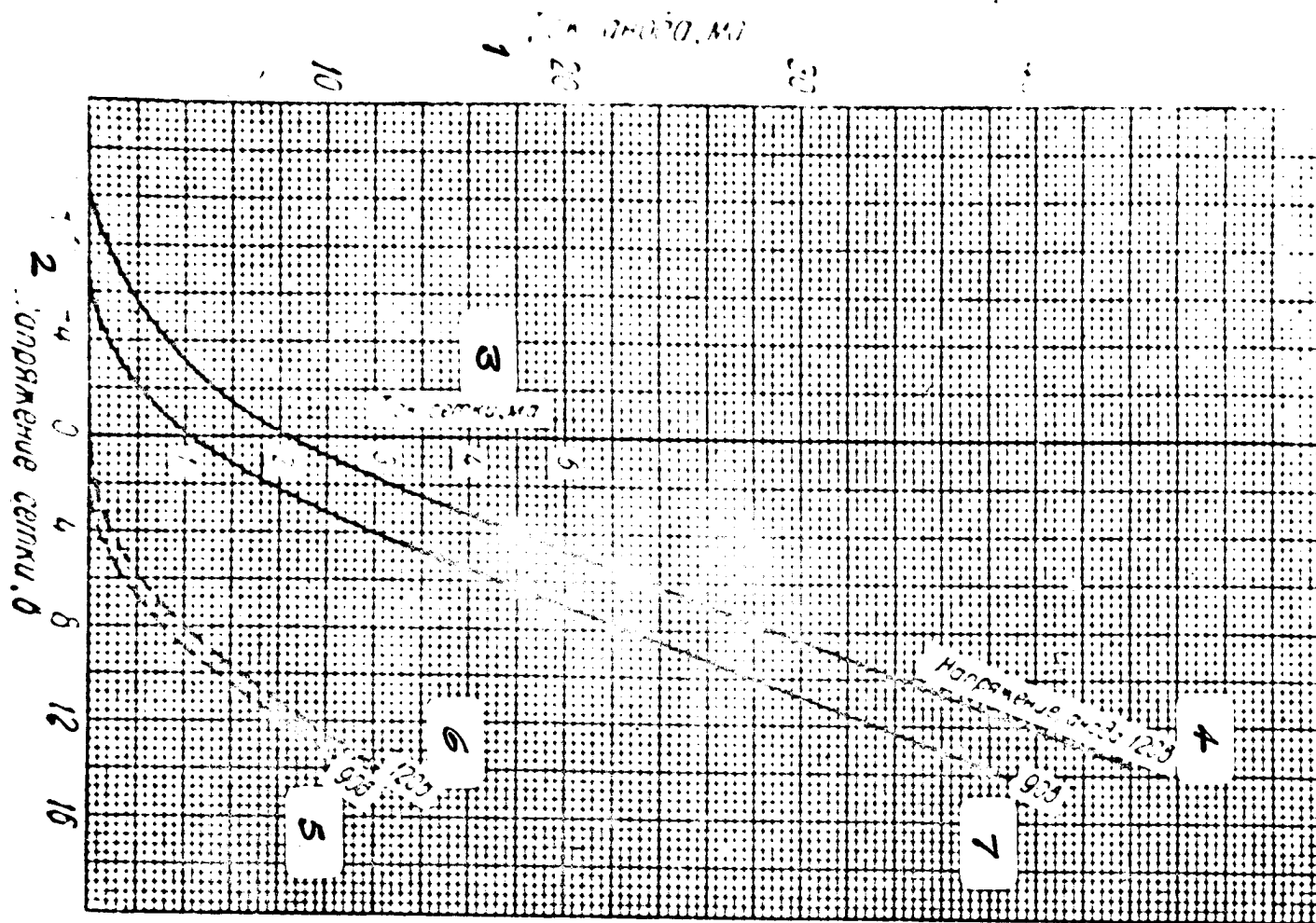
1N3S

Average Characteristics

(For each triode)

———— Plate-grid
 ----- Grid

Filament voltage, 1.2 v.



- 1) Plate current, ma; 2) grid voltage, v; 3) grid current, ma;
 4) plate voltage, 120 v; 5) 90 v; 6) 120 v; 7) 90 v.

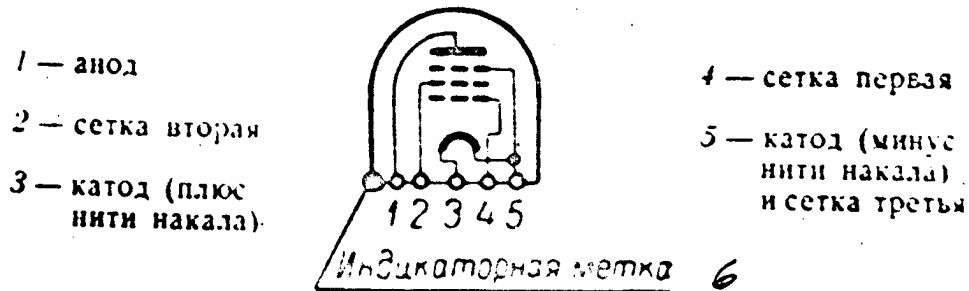
(Above material published April 1959, PKB, G-2)

POWER PENTODE

1P2B

Basic function audio power amplification.Construction glass subminiature.Basic Data

Cathode - Oxide-coated filament-type	
Maximum height (without leads)	38 mm
Dimensions in horizontal projection, maximum	10.2 x 7.2 mm
Number of leads	5
Length of leads	no less than 35 mm
Lead diameter	0.3 mm
Maximum weight	3 grams
Dimensional drawing - 2B	

Connection Diagram for Electrodes and Leads

1) Plate; 2) screen; 3) cathode (positive side of filament); 4) first grid; 5) cathode (negative side of filament) and suppressor grid; 6) indicator dot.

Electrical Data

Filament voltage (=)	1.25 v
Filament current	50 ± 5 ma
Plate voltage (=)	45 v
Screen voltage (=)	45 v
First-grid voltage (=)	-2 v
Plate current	no more than 1.3 ma
Screen current	no more than 0.45 ma
Transconductance	no less than 0.35 ma/v
Output power*	no less than 8 mw
Nonlinear distortion*	no more than 12%
Service life	500 hours
Service-life criterion: transconductance	no less than 0.28 ma/v

*With a plate load of 0.05-0.06 megohm, and an alternating voltage on the first grid of 1.41 mv (eff).

(Above material published April 1959, PKB, Sheet 1)

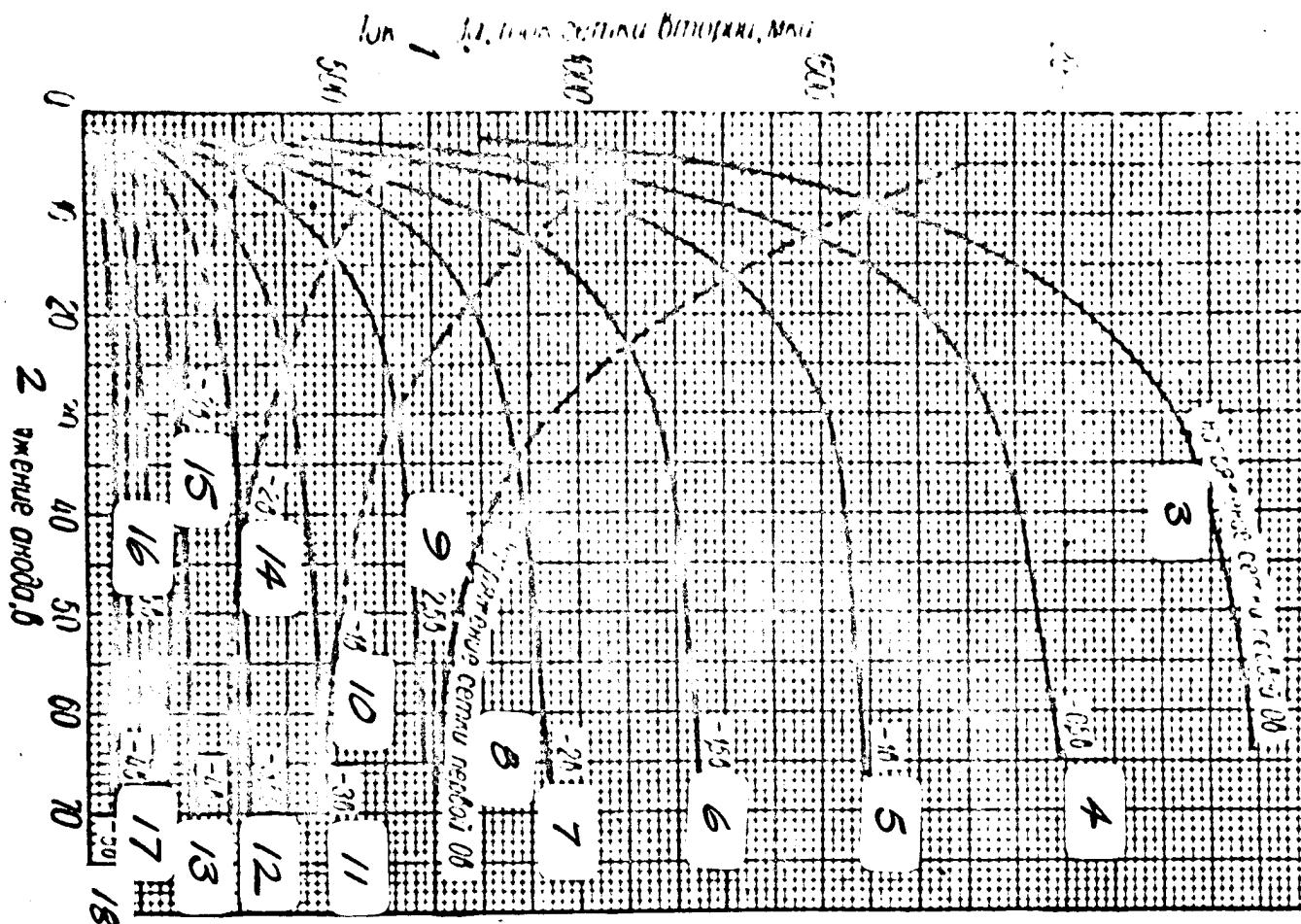
POWER PENTODE

1P2B

Average Characteristics

———— Plate
 ----- Grid-plate (for screen grid)

Filament voltage, 1.25 v.
 Screen voltage, 45 v.



1) Plate current, screen current, μ a; 2) plate voltage, v; 3) first-grid voltage 0 v; 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) -2 v; 8) first-grid voltage 0 v; 9) -2.5 v; 10) -1 v; 11) -3 v; 12) -3.5 v; 13) -4 v; 14) -2 v; 15) -3 v; 16) -4.5 v; 17) -4 v; 18) -5 v.

(Above material published April 1959, PKB, G-1)

POWER PENTODE

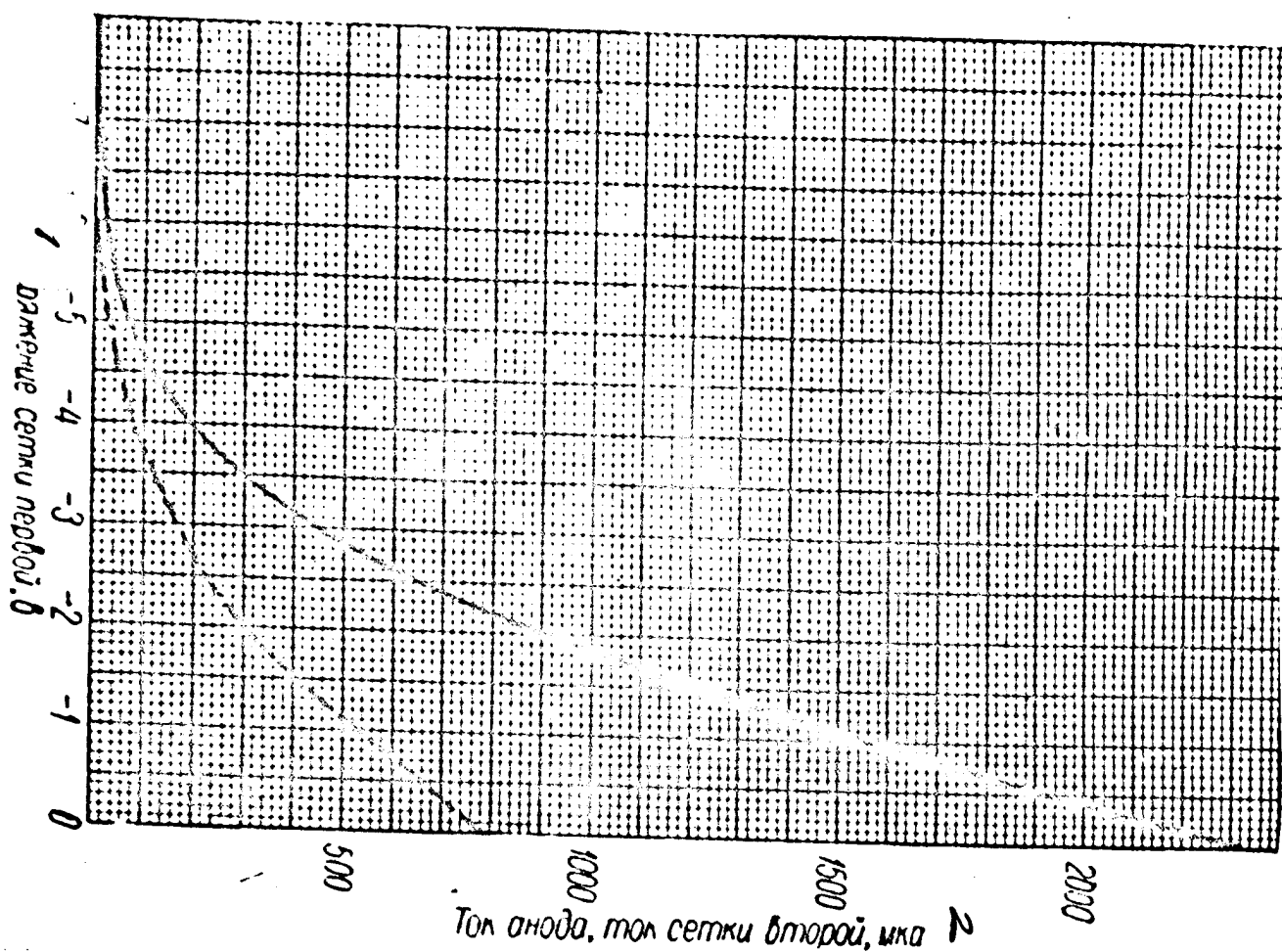
1P2B

Average Characteristics

—— Plate-grid
 ----- Grid (for screen grid)

Filament voltage, 1.25 v.

Plate voltage, 45 v.



1) First-grid voltage, v; 2) plate current, screen current, μ A.

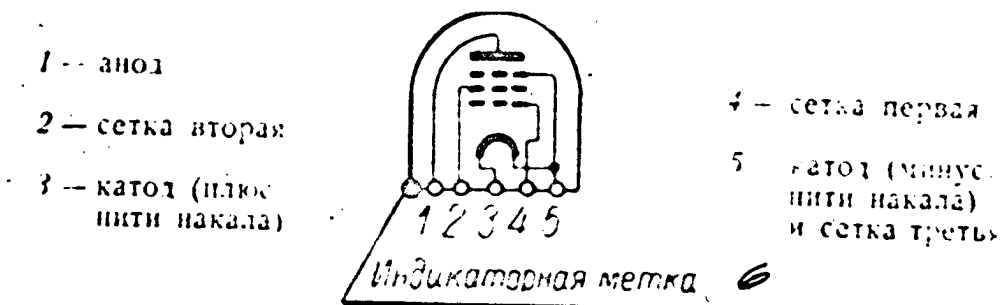
(Above material published April 1959, PKB, G-2)

POWER PENTODE

1P3B

Basic function audio power amplification.Construction glass subminiature.General Data

Cathode — oxide-coated filament-type	
Maximum height (without leads)	38 mm
Dimensions in horizontal projection, maximum	10.2 x 7.2 mm
Number of leads	5
Length of leads	no less than 35 mm
Lead diameter	0.3 mm
Maximum weight	3 grams
Dimension drawing — 2B	

Connection Diagram for Electrodes and Leads

1) Plate; 2) screen; 3) cathode (positive side of filament); 4) first grid; 5) cathode (negative side of filament), and suppressor; 6) indicator dot.

Electrical Data

Filament voltage (=)	1.25 v
Filament current	28 ± 3 ma
Plate voltage (=)	45 v
Screen voltage (=)	45 v
First-grid voltage (=)	-2 v
Plate current	no more than 1.1 ma
Screen current	no more than 0.45 ma
Transconductance	no less than 0.3 ma/v
Output power*	no less than 4.5 mw
Nonlinear distortion*	no more than 12%
Service Life	500 hours
Service-life criterion: transconductance	no less than 0.24 ma/v

*With plate load of 0.05 + 0.06 megohm and alternating grid voltage of 0.41 mv (eff).

(Above material published April 1959, PKB, Sheet 1)

POWER PENTODE

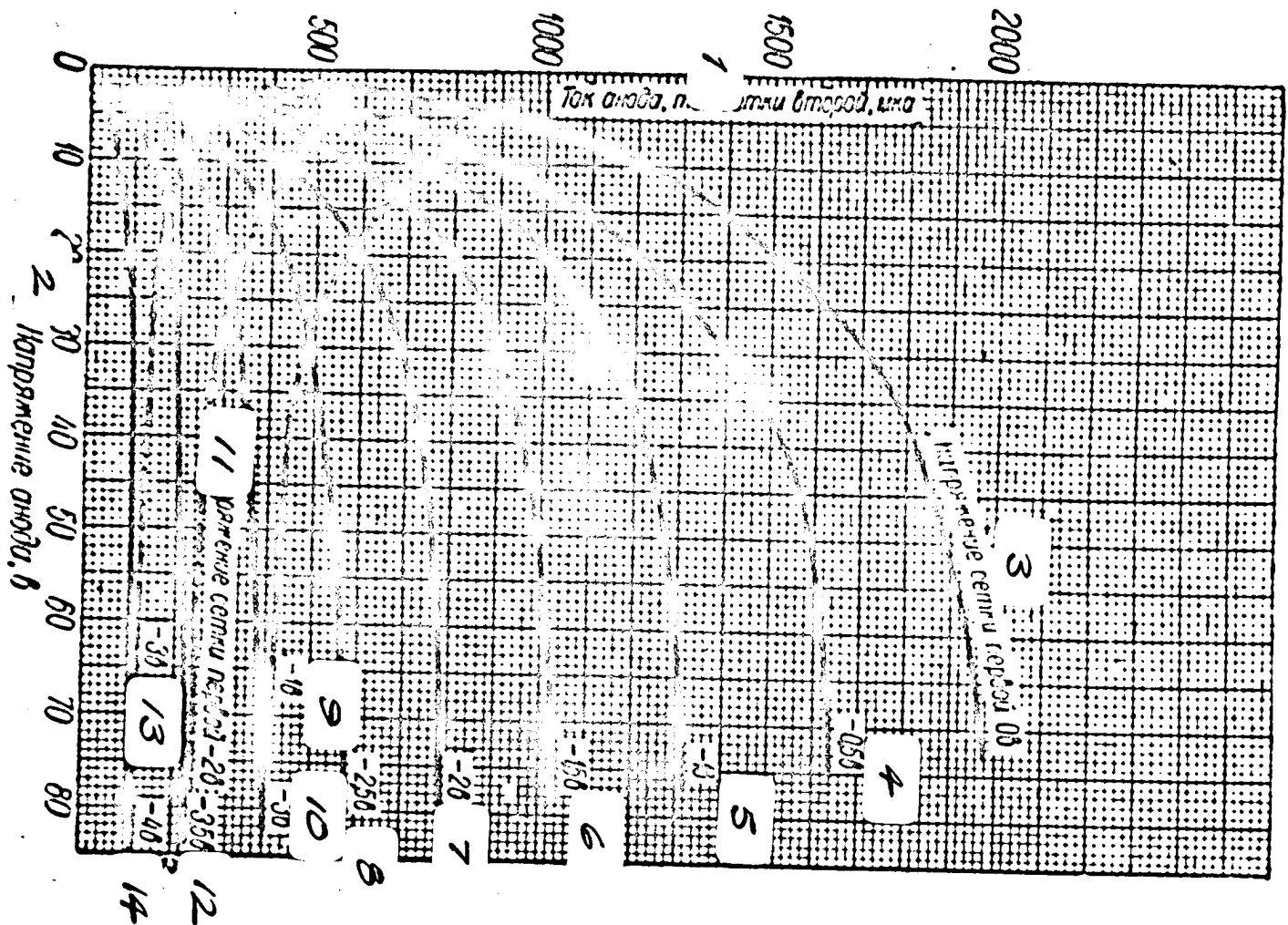
1P3B

Average Characteristics

———— Plate
 ----- Grid-plate (for screen)

Filament voltage, 1.25 v.

Screen voltage, 45 v.



1) Plate current, screen current, μA ; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) -2 v; 8) -2.5 v; 9) -1 v; 10) -3 v; 11) first grid voltage, -2 v; 12) -3.5 v; 13) -3 v; 14) -4 v.

(Above material published April 1959, PKB, G-1)

POWER PENTODE

1P3B

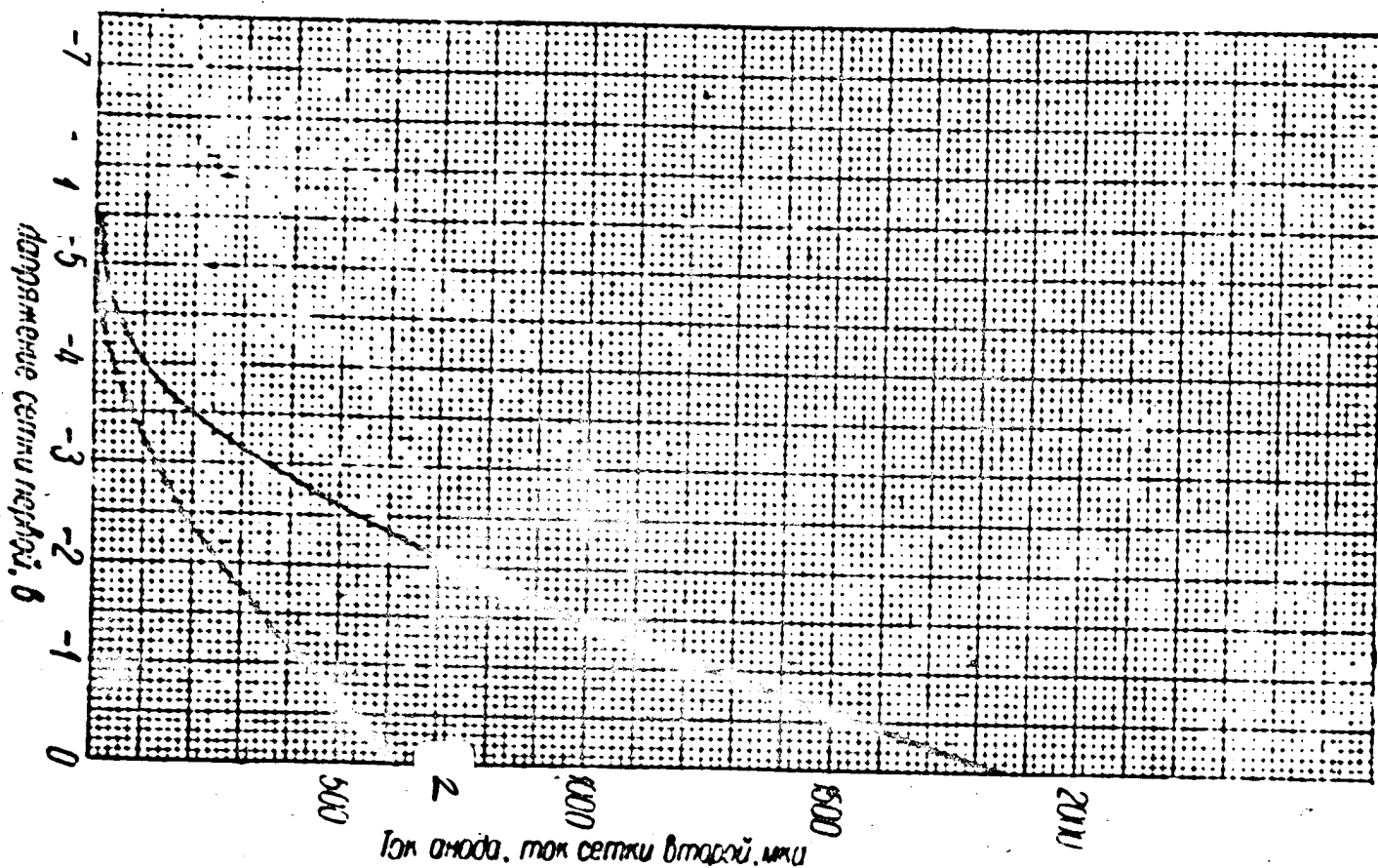
Average Characteristics

—— Plate-grid
 ----- Grid (for screen grid)

Filament voltage, 1.25 v.

Plate voltage, 45 v.

Screen voltage, 45 v.



1) First-grid voltage, v; 2) plate current, screen current, μ A.

(Above material published April 1959, PKB, G-2)

POWER PENTODE

1P4B

Basic function audio power amplification.Construction glass subminiature.General Data

Cathode — Oxide-coated filament-type	
Maximum height without leads	38 mm
Dimensions in horizontal projection, maximum	10.2 x 7.2 mm
Number of leads	5
Length of leads	no less than 35 mm
Lead diameter	0.4 mm
Maximum weight	3 grams
Dimension drawing — 2B	

Connection Diagram for Electrons and Leads

1) Plate; 2) screen; 3) cathode (positive side of filament); 4) first grid; 5) cathode (negative side of filament) and suppressor; 6) indicator dot.

Electrical Data

Filament voltage (=)	1.25 v
Filament current	20 $\pm$ 3 ma
Plate voltage (=)	45 v
Screen voltage (=)	45 v
First-grid voltage (=)	-2 v
Plate current	600 ⁺⁵⁰⁰ ₋₂₅₀ μ a
Screen current	no more than 450 μ a
Transconductance	400 ⁺¹⁰⁰ ₋₁₂₀ μ a/v
Output power*	no less than 3.5 mw
Nonlinear distortion*	10%
Internal resistance	350 kohm
Service life	500 hours
Service-life criterion: transconductance	no less than 200 μ a/v

*For load of 0.5-0.6 megohm and alternating voltage on first grid of 1.41 v (eff).

(Above material published April 1959, PKB, Sheet 1)

POWER PENTODE

1P4B
50X1-HUM

Interelectrode Capacitances

Input
Output
Transfer

3 μmf $\leftarrow$
6 μmf $\leftarrow$
0.3 μmf

Maximum Permissible Operating Data

Maximum filament voltage (=)	1.5 v
Minimum filament voltage (=)	1.0 v
Maximum plate voltage (=)	50 v
Maximum screen voltage (=)	50 v
Maximum power dissipated by plate	50 mw
Maximum first-grid circuit resistance	3 megohm
Maximum plate current	1.5 ma

(Above material published April 1959, PKB, Sheet 1)

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POWER PENTODE

1P4B

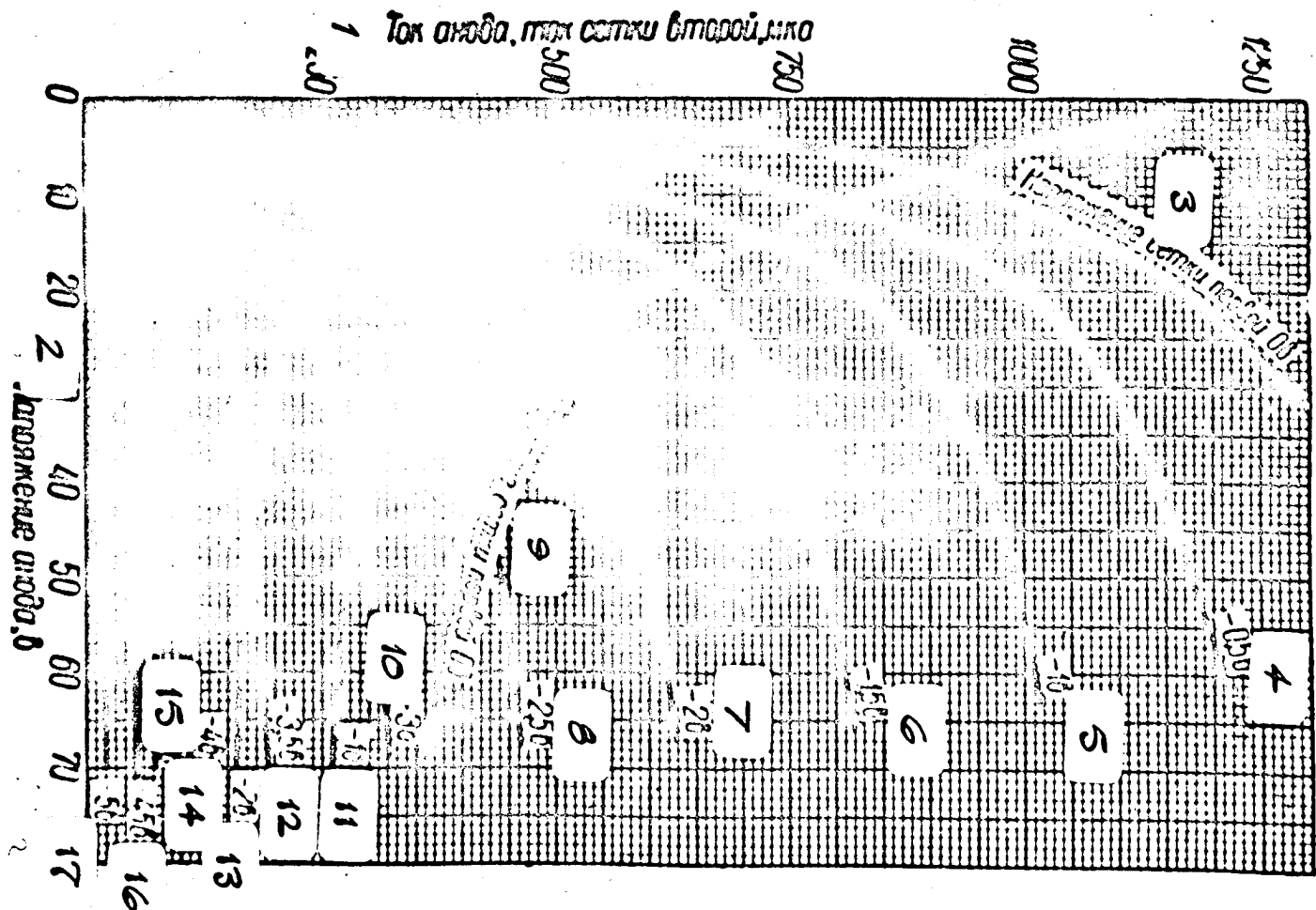
50X1-HUM

Average Characteristics

—— Plate
 ----- Grid-plate (for screen grid)

Filament voltage, 1.25 v.

Screen voltage, 45 v.



1) Plate current, screen current, μA ; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) -2 v; 8) -2.5 v; 9) first-grid voltage, 0 v; 10) -3 v; 11) -1 v; 12) -3.5 v; 13) -2 v; 14) -4 v; 15) -3 v; 16) -4.5 v; 17) -5 v.

(Above material published April 1959, PKB, G-1)

POWER PENTODE

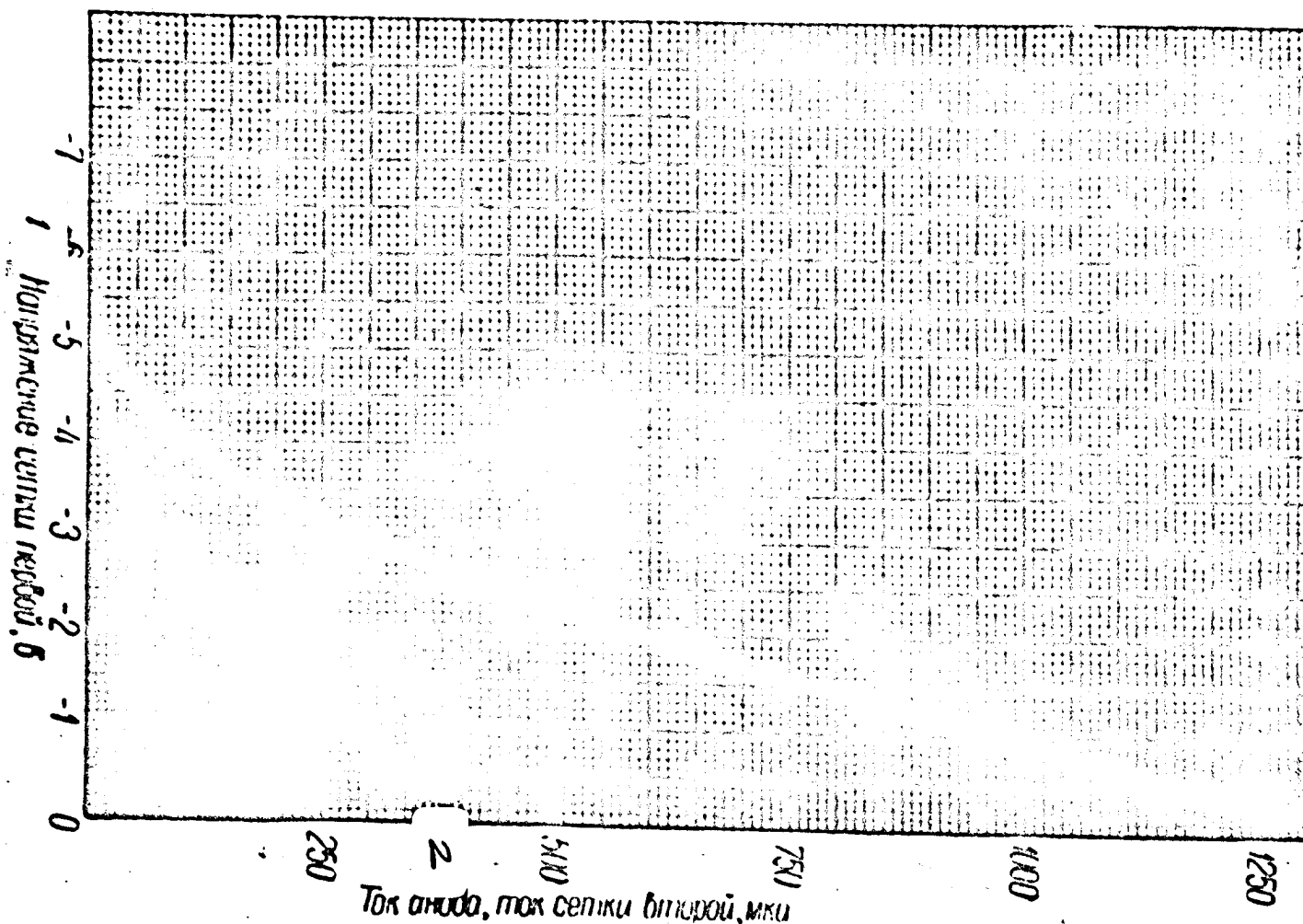
1P4B

50X1-HUM

Average Characteristics

—— Plate-grid
 ----- Grid (for screen grid)

Filament voltage, 1.25 v.
 Plate voltage, 45 v.
 Screen voltage, 45 v.



1) First-grid voltage, v; 2) plate current, screen current, μ a.

(Above material published April 1959, PKB, G-2)

50X1-HUM

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RADIO-FREQUENCY TRIODE

50X1-HUM 1S12P

Basic function amplification and conversion of radio frequencies in radio-receiving equipment.

Construction glass miniature.

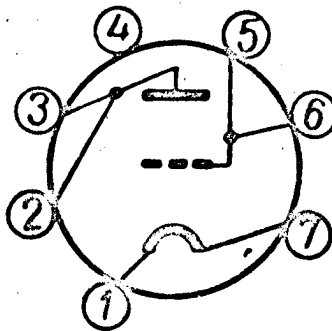
Basic Data

Cathode — oxide-coated filament-type
Maximum height
Maximum diameter
Weight
Number of pins
Dimension drawing — 5P

60 mm
19 mm
about 10 grams
7

Connection Diagram for Electrodes and Pins

1 — катод (минус
нити накала)
2 — анод
3 — анод
4 — не подключаен



5 — сетка
6 — сетка
7 — катод
(плюс нити
накала)

1) Cathode (negative side of filament); 2) plate; 3) plate; 4) not connected; 5) grid; 6) grid; 7) cathode (positive side of filament).

Note: In radio-frequency operation, the first pin is grounded.

Electrical Data

Filament voltage (=)	1.2 v
Filament current	30 ma
Plate voltage (=)	60 v
Grid voltage (=)	-1 v
Plate current	1.4 ma
Plate current*	1.1 ma
Grid current*	3.7 μ a
Transconductance	0.87 μ a/v
Amplification factor	16
Conversion transconductance*	0.35 ma/v

*In converter operation with alternating grid voltage of 3.5 v (eff) and resistance in grid circuit of 1 megohm.

Preliminary data.

(Above material published April 1959, PKB, Sheet 1)

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SECRET

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RADIO-FREQUENCY TRIODE

50X1-HUM 1S12P

Input resistance *:

at frequency of 30 Mc	80 kohm
at frequency of 60 Mc	35 kohm
at frequency of 100 Mc	12 kohm
Equivalent noise resistance	3.5 kohm
Service life	1000 hours

*For radio-frequency signal-voltage amplitude in grid circuit of
≈ 0.3 v.

Interelectrode Capacitances

Input	0.85 μμf
Output	0.75 μμf
Transfer	2 μμf

Maximum Permissible Operating Data

Maximum filament voltage (=)	1.4 v
Minimum filament voltage (=)	0.9 v
Maximum plate voltage (=)	90 v
Maximum mean cathode current	2.5 ma
Maximum plate dissipation	0.25 watt
Maximum grid leakage resistance	3 megohm
Maximum oscillation frequency*	300 Mc

*In long-line oscillator circuit.

Preliminary data.

(Above material published April 1959, PKB, Sheet 1)

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RADIO-FREQUENCY TRIODE

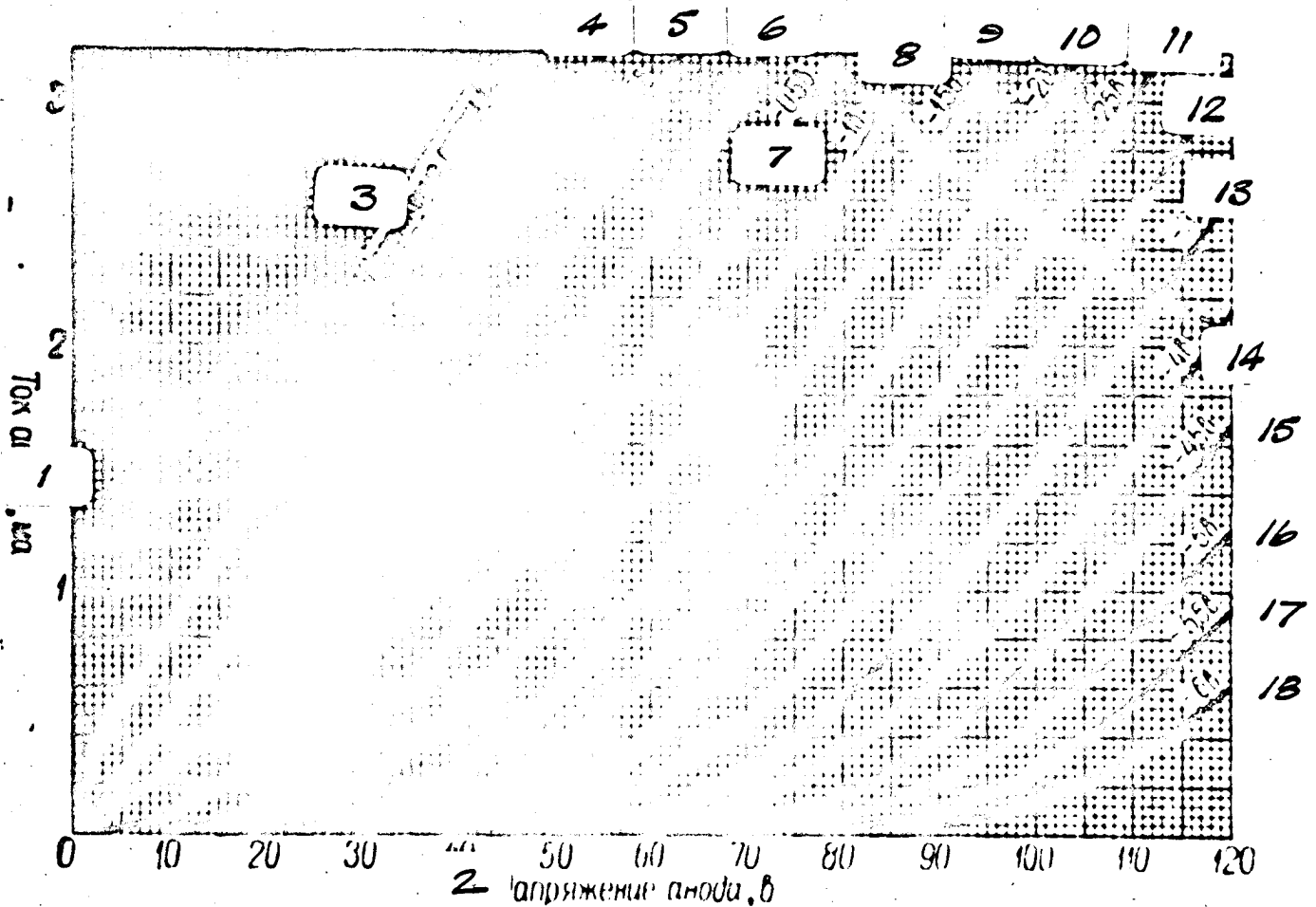
50X1-HUM

1S12P

Average Characteristics

----- Maximum plate dissipation

Filament voltage, 1.2 v.



- 1) Plate current, ma; 2) plate voltage, v; 3) grid voltage, 1.5 v;
 4) 1 v; 5) 0.5 v; 6) 0 v; 7) -0.5 v; 8) -1 v; 9) -1.5 v; 10) -2 v;
 11) -2.5 v; 12) -3 v; 13) -3.5 v; 14) -4 v; 15) -4.5 v; 16) -5 v;
 17) -5.5 v; 18) -6 v.

(Above material published April 1959, PKB, G-1)

RADIO-FREQUENCY TRIODE

1S12P

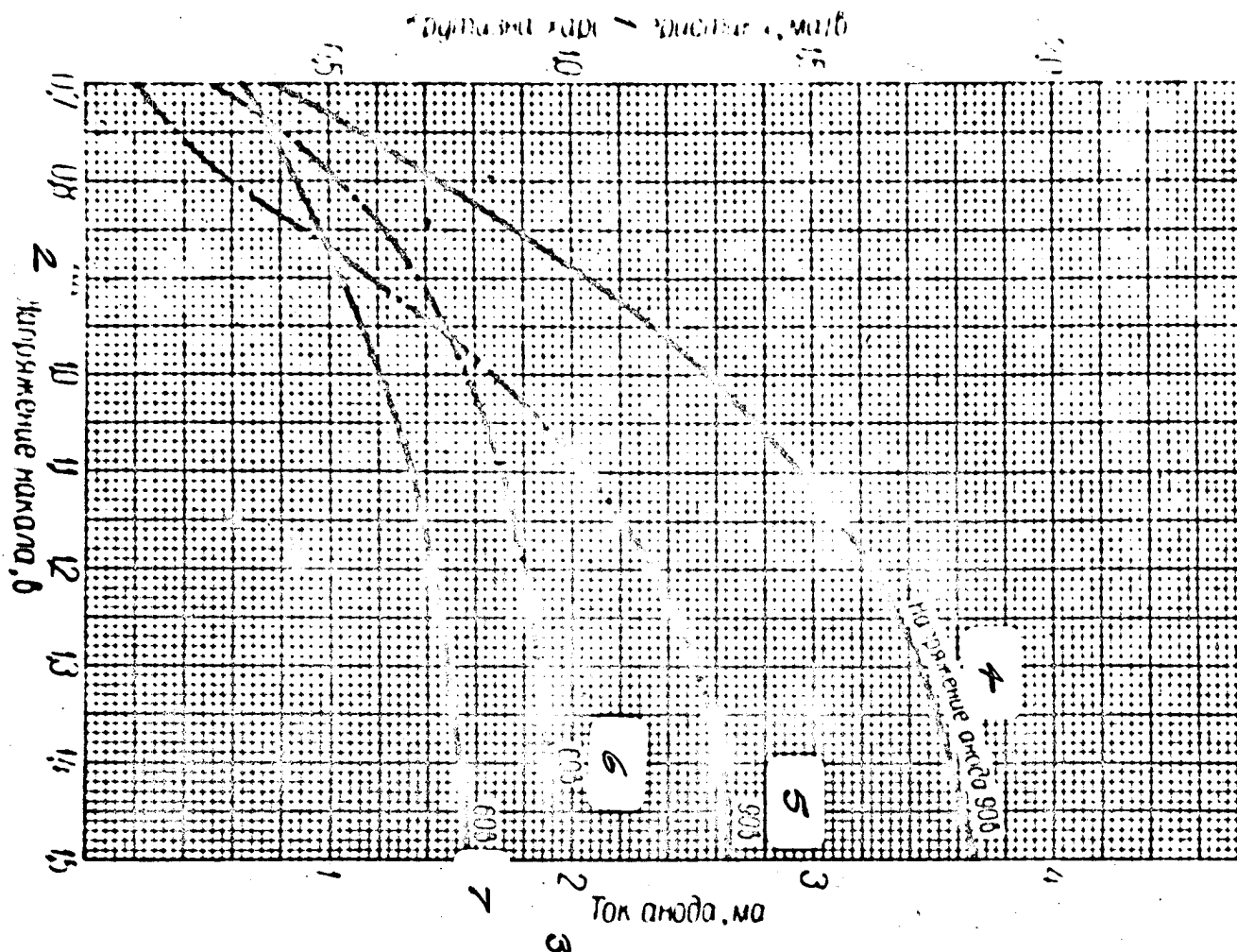
Average Characteristics

(As a function of filament voltage)

—— Plate current
 - - - - - Mutual conductances

Filament voltage, 1.2 v.

Grid voltage, -1 v.



1) Mutual conductance, ma/v; 2) filament voltage, v; 3) plate current, ma; 4) plate voltage, 90 v; 5) 90 v; 6) 60 v; 7) 60 v.

(Above material published April 1959, PKB, G-2)

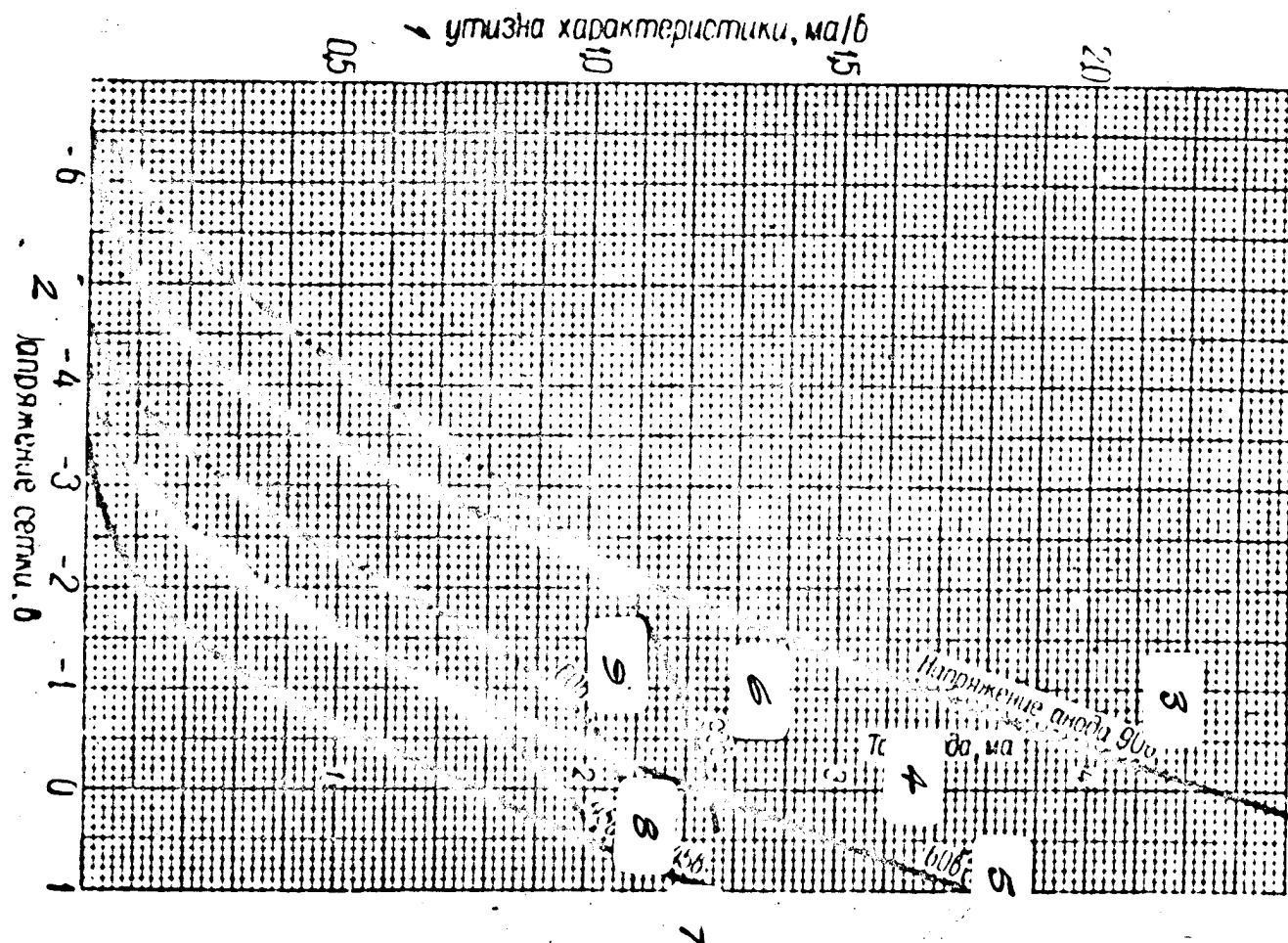
RADIO-FREQUENCY TRIODE

1S12P

Average Characteristics

— Plate-grid
 - - - - - Mutual conductances

Filament voltage, 1.2 v.



1) Mutual conductances, ma/v; 2) grid voltage, v; 3) plate voltage, 90 v; 4) plate current, ma; 5) 60 v; 6) 90 v; 7) 45 v; 8) 45 v; 9) 60 v.

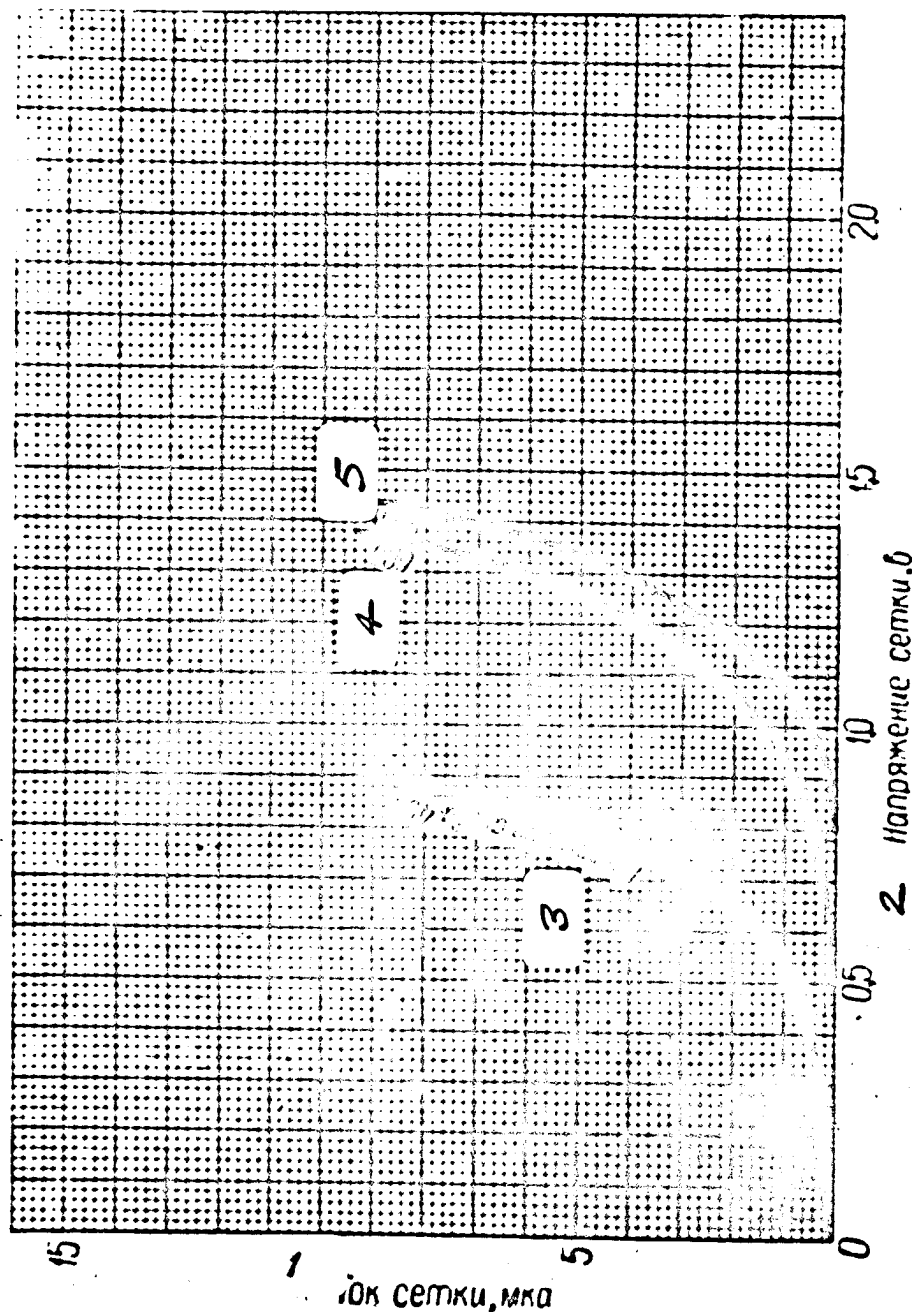
(Above material published April 1959, PKB, G-3)

RADIO-FREQUENCY TRIODE

1S12P

Average Grid Characteristics

Filament voltage, 1.2 v.



1) Grid current, μA ; 2) grid voltage, v; 3) plate voltage, 45 v;
 4) 60 v; 5) 90 v.
 (Above material published April 1959, PKB, G-4)

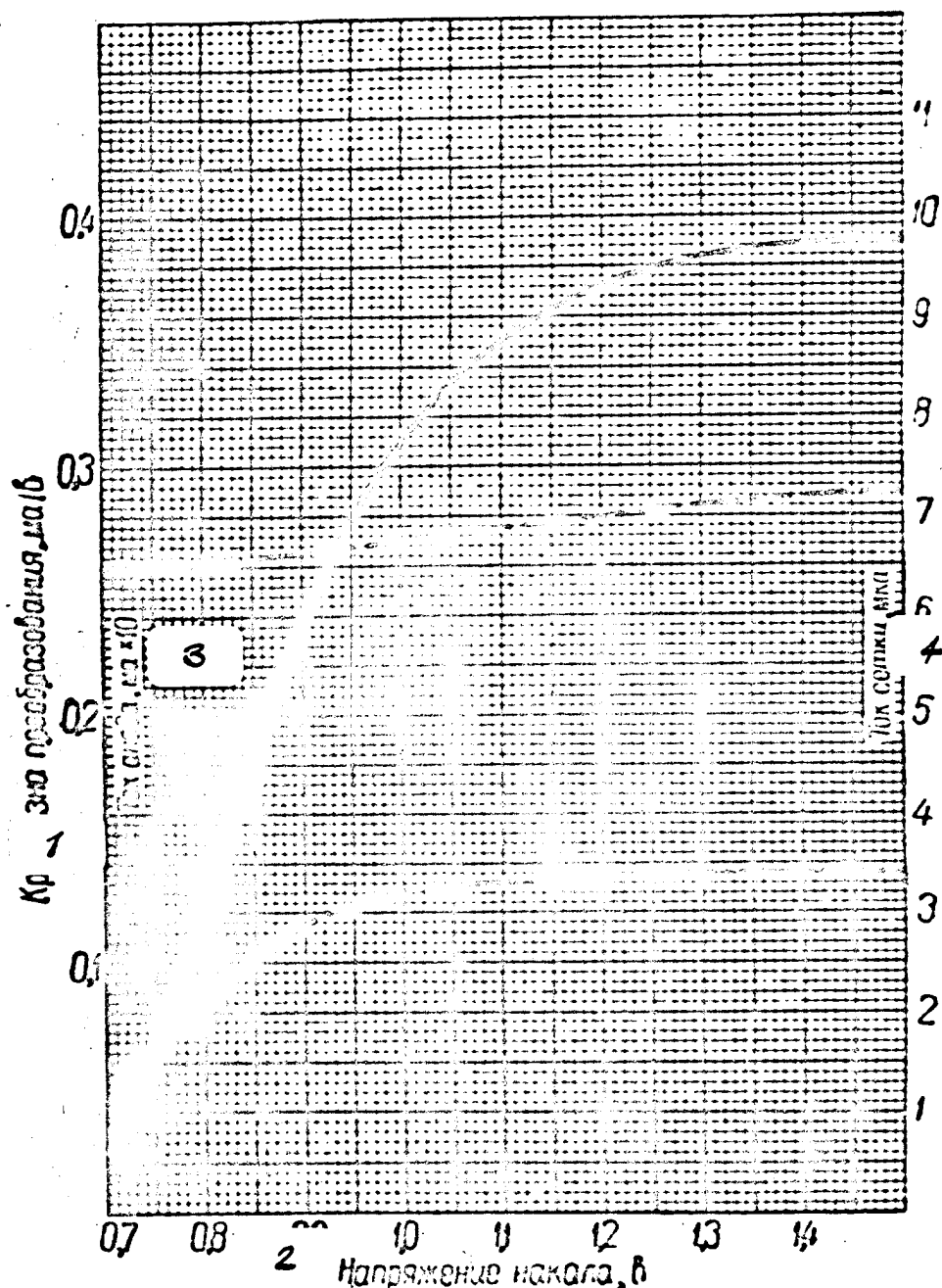
RADIO-FREQUENCY TRIODE

1S12P

Average Dynamic Characteristics
 (as a function of filament voltage)

———— Conversion transconductance
 - - - - - Plate current
 - - - - - Grid current

Plate voltage, 60 v; alternating grid voltage, 3.5 v (eff);
 resistance in grid circuit, 0.5 megohm.



1) Conversion transconductance, ma/v; 2) filament voltage, v; 3) plate current, $ma \times 10$; 4) grid current, μa .
 (Above material published April 1959, PKB, G-5)

RADIO-FREQUENCY TRIODE

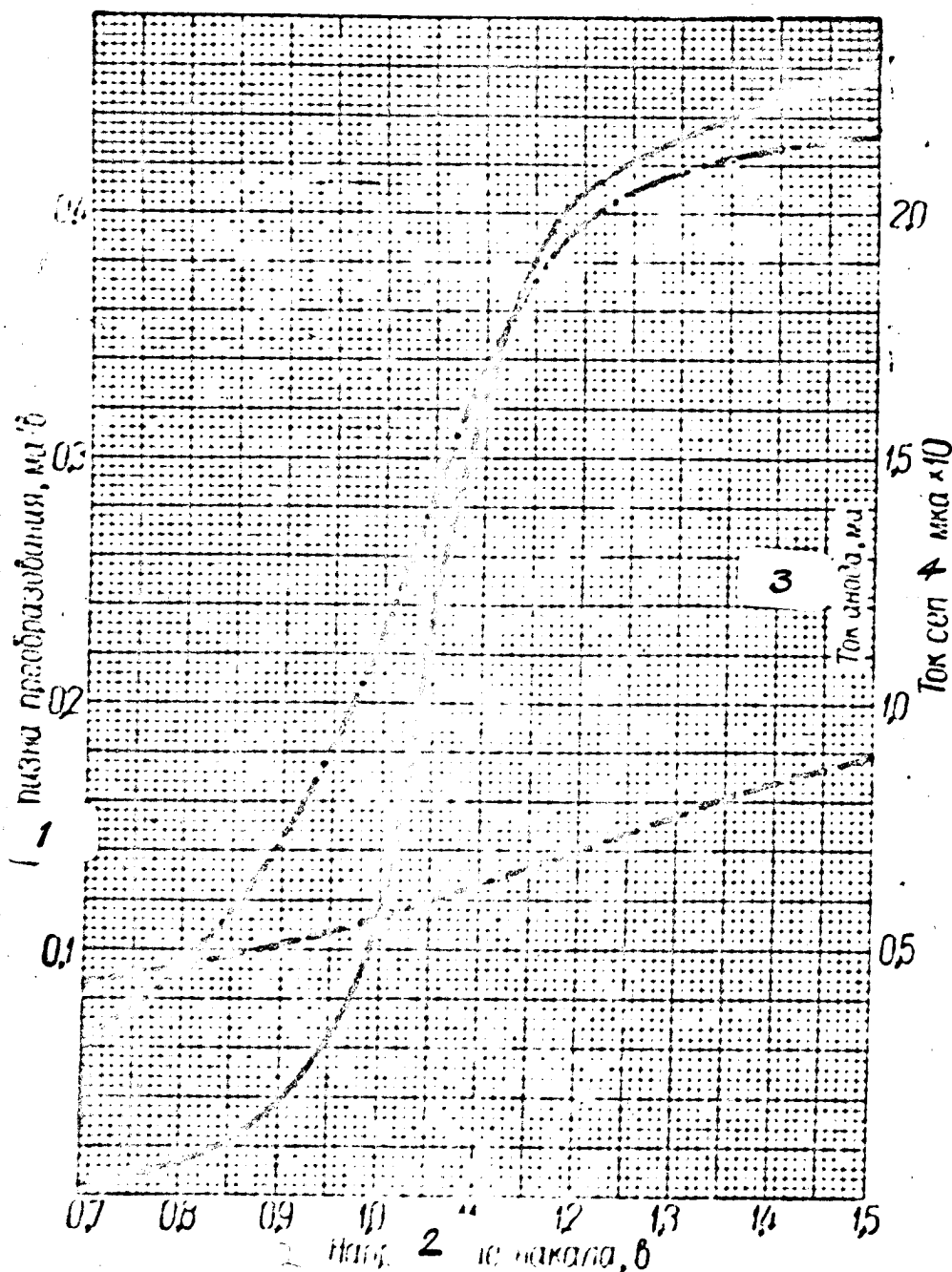
1S12P

Average Dynamic Characteristics

(As a function of filament voltage)

- Conversion transconductance
 - - - - Plate current
 - - - - Grid current

Plate voltage, 90 v; alternating grid voltage, 6 v (eff); resistance in grid circuit, 1 megohm.



1) Conversion transconductance, ma/v; 2) filament voltage, v; 3) grid current, $\mu\text{a} \times 10$; 4) plate current, ma.

(Above material published April 1959, PKB, G-6)

RADIO-FREQUENCY TRIODE

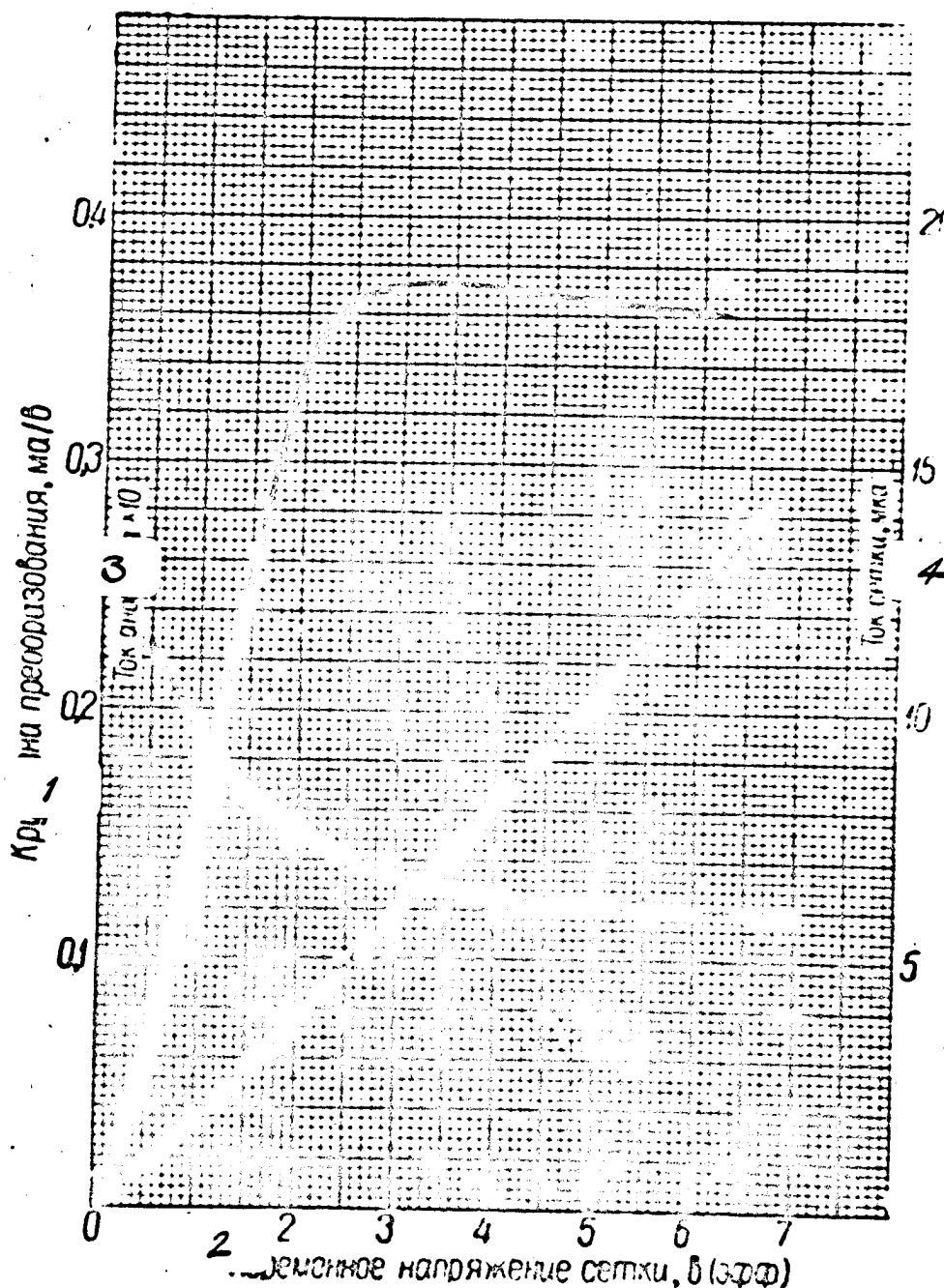
1S12P

Average Dynamic Characteristics

(As a function of alternating grid voltage)

- Conversion transconductance
 - - - - - Plate current
 - - - - - Grid current

Filament voltage, 1.2 v; plate voltage, 60 v; resistance in grid circuit, 0.5 megohm.



- 1) Conversion transconductance, ma/v; 2) alternating grid voltage, v (eff); 3) plate current, ma x 10; 4) grid current, μ a.
 (Above material published April 1959, PKB, G-7)

RADIO-FREQUENCY TRIODE

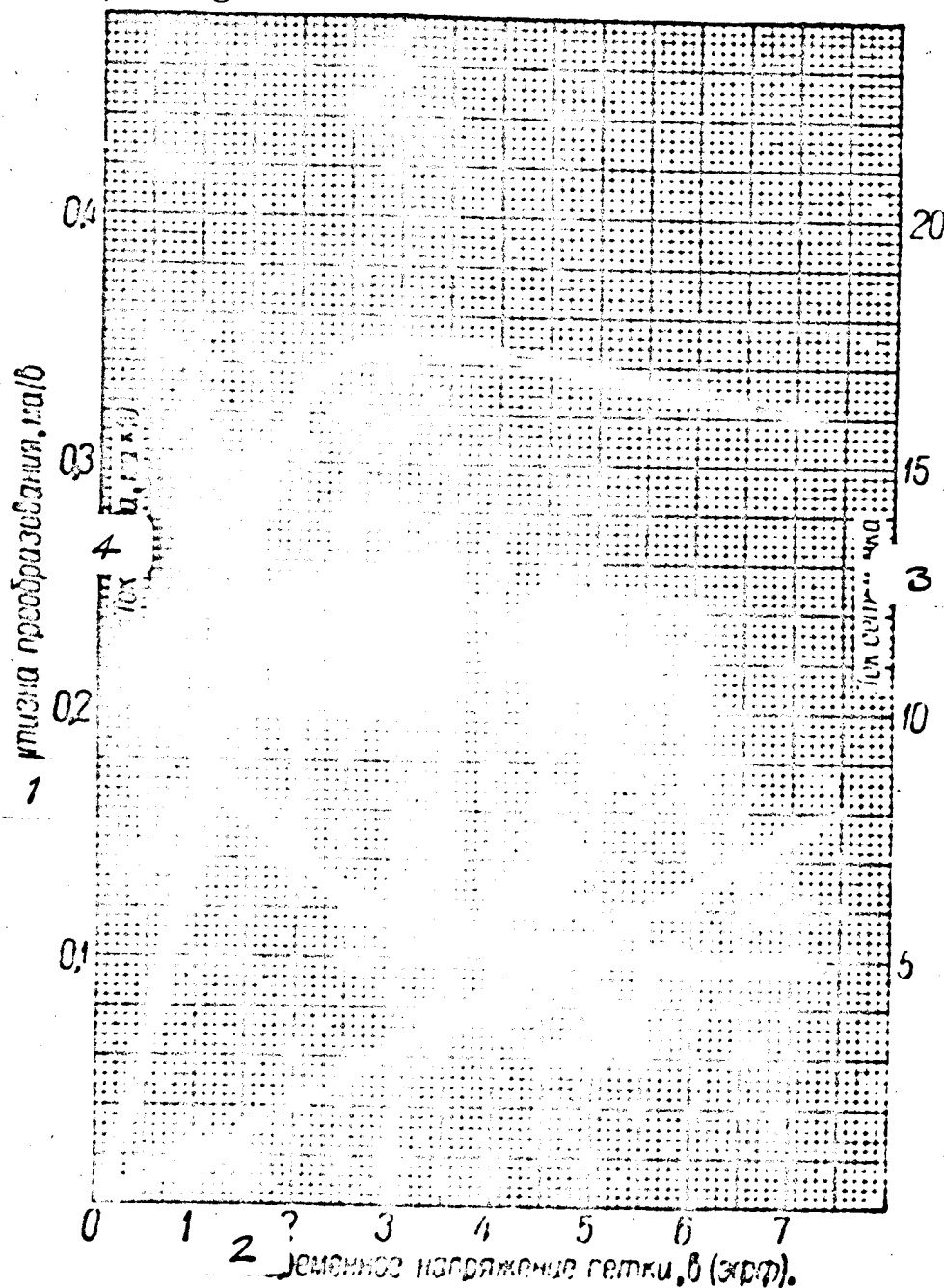
1S12P

Average Dynamic Characteristics

(As a function of alternating grid voltage)

— Conversion transconductance
 - - - - - Plate current
 - - - - - Grid current

Filament voltage, 1.2 v; plate voltage, 60 v; grid-circuit resistance, 1 megohm.



1) Conversion transconductance, ma/v; 2) alternating grid voltage, v (eff); 3) grid current, μ a; 4) plate current, ma x 10.
 (Above material published April 1959, PKB, G-8)

RADIO-FREQUENCY TRIODE

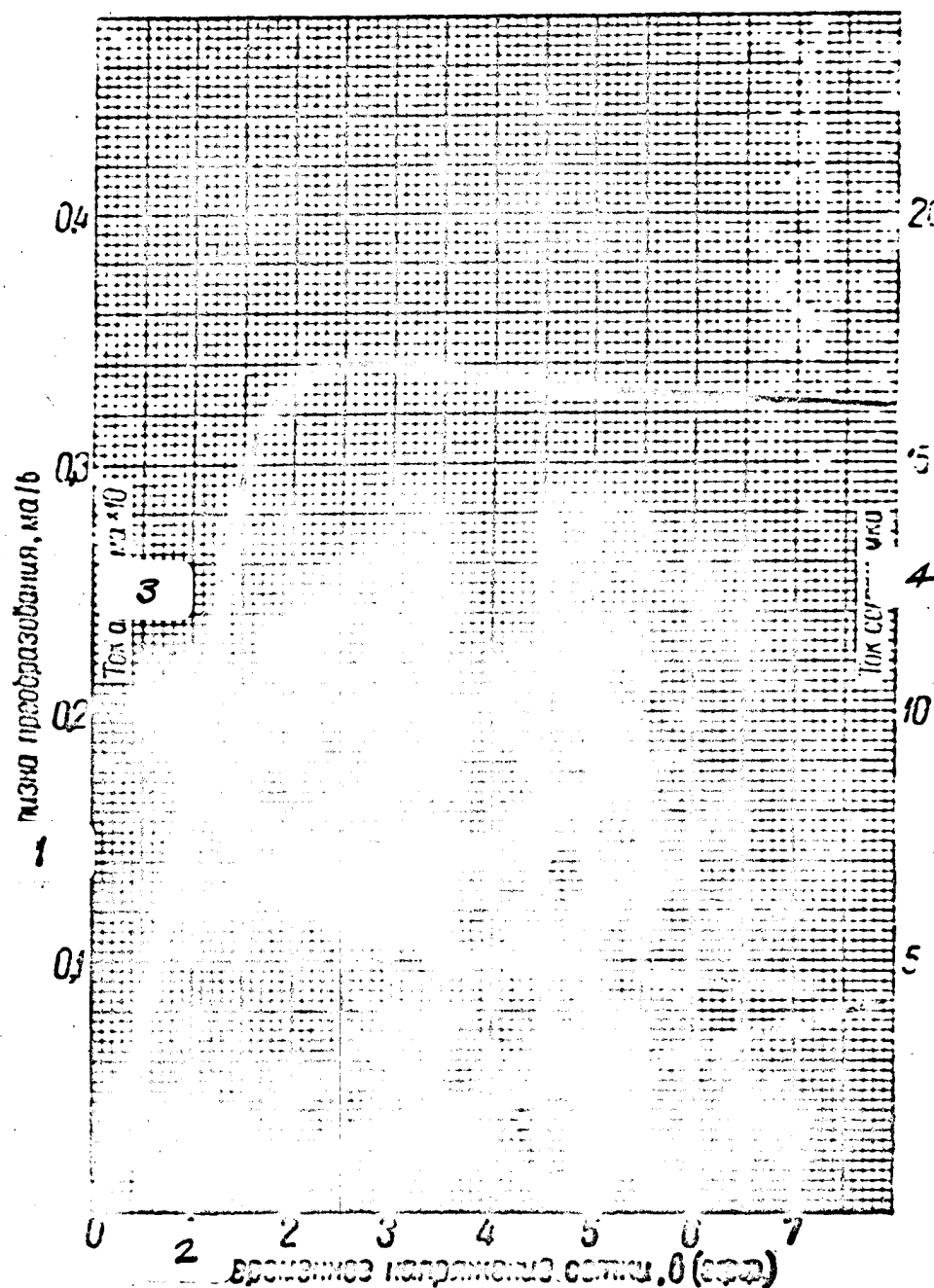
1S12P

Average Dynamic Characteristics

(As a function of alternating grid voltage)

- Conversion transconductance
 - - - - - Plate current
 - - - - - Grid current

Filament voltage, 1.2 v; plate voltage, 60 v; grid-circuit resistance, 2 megohms.



1) Conversion transconductance, ma/v; 2) alternating grid voltage, v (eff); 3) plate current, ma x 10; 4) grid current, μ a.
 (Above material published April 1959, PKB, G-9)

RADIO-FREQUENCY TRIODE

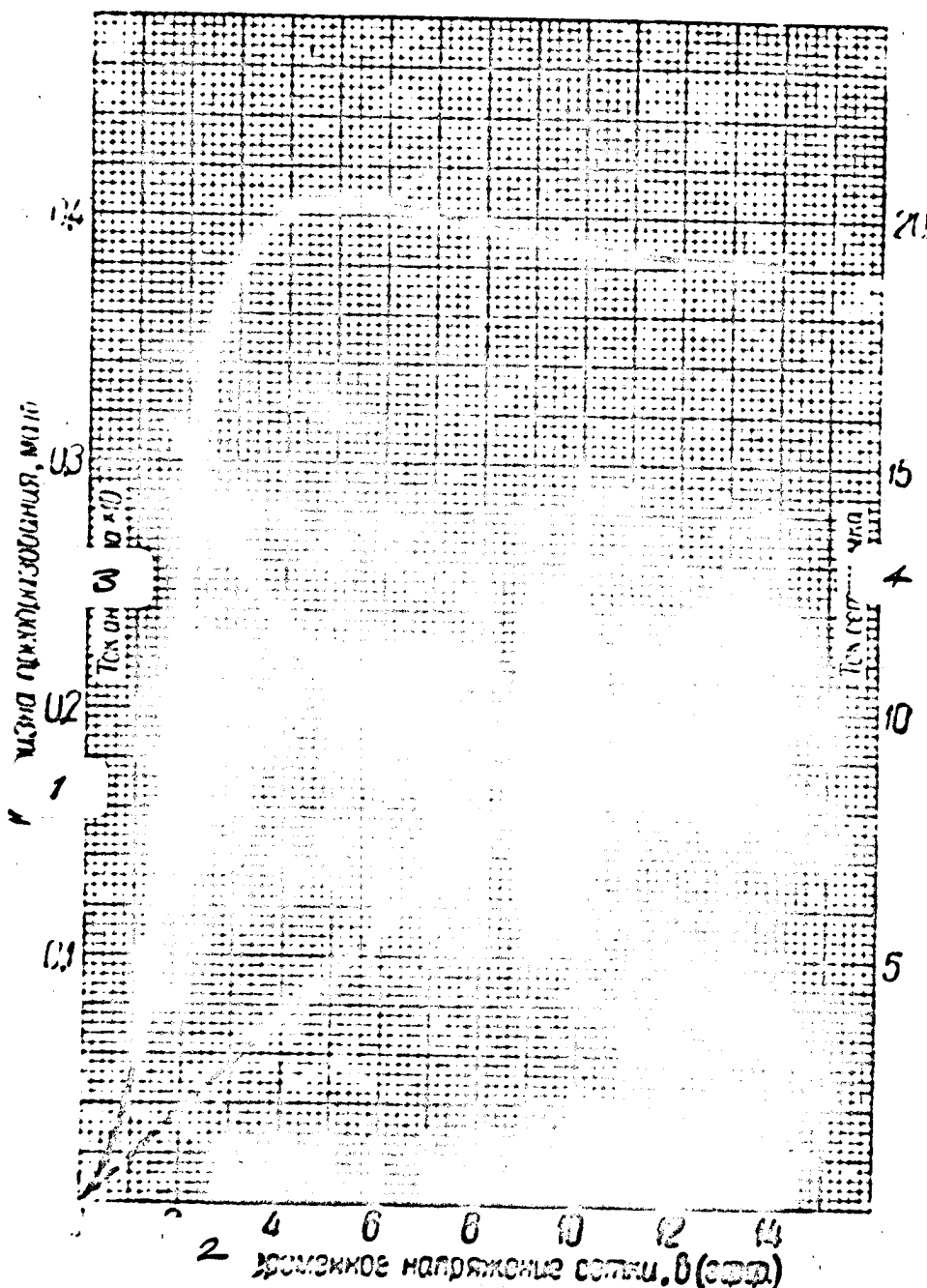
1S12P

Average Dynamic Characteristics

(As a function of alternating grid voltage)

— Conversion transconductance
 - - - - - Plate current
 - - - - - Grid current

Filament voltage, 1.2 v; plate voltage, 90 v; grid-circuit resistance, 1 megohm.



1) Conversion transconductance, ma/v; 2) alternating grid voltage, v (eff); 3) plate current, ma x 10; 4) grid current, μ a.
 (Above material published April 1959, PKB, G-10)

HIGH-VOLTAGE RECTIFIER

1Ts1S

Basic function rectification of high-voltage pulses in television equipment.

Construction glass.

Basic Data

Cathode — oxide-coated filament-type

Maximum height

90 mm

Maximum diameter

32.8 mm

Maximum weight

30 grams

Base — Octal, Ts1-4-4A

Cap lead — VK2-3

Dimension drawing — 21S

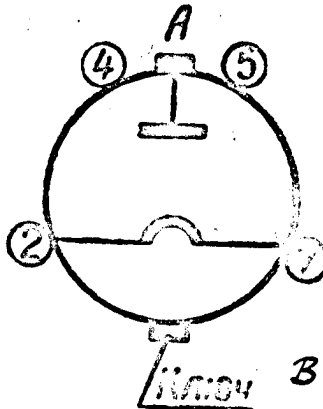
Operating position — vertical

Connection Diagram for Electrodes and Leads

2 — катод (нить накала)

4 — не подключен

5 — не подключен



— катод (нить накала)

A — верхний вывод-колпачок — анод

2) Cathode (filament); 4) not connected; 5) not connected; 7) cathode (filament); A) Upper cap — plate; B) Key.

Electrical Data

Filament voltage ($\approx$ or $=$)

0.7 v

Filament current

185 $\pm$ 15 ma

Supply-voltage pulse

10 kv

Pulse repetition rate, per second

16,000

Load resistance

20 megohms

Filter capacitor

0.02 μ f

Cathode emission current*

no less than 6 ma

Plate current for filament voltage of 0.6 v*

no less than 5 ma

Rectified current

no less than 0.5 ma

Inverse current**

no more than 5 μ a

Service life

500 hours

Service-life criterion:

Plate current*

no less than 4 ma

*For plate voltage of 50 v.

** For plate voltage of -10 kv.

(Above material published April 1959, PKB, Sheet 1)

HIGH-VOLTAGE RECTIFIER

1TslS

Interelectrode Capacitances

Plate-cathode

no more than 2 μ f

Maximum Permissible Operating Data

Maximum peak inverse voltage

15 kv

Maximum plate dissipation

0.5 watt

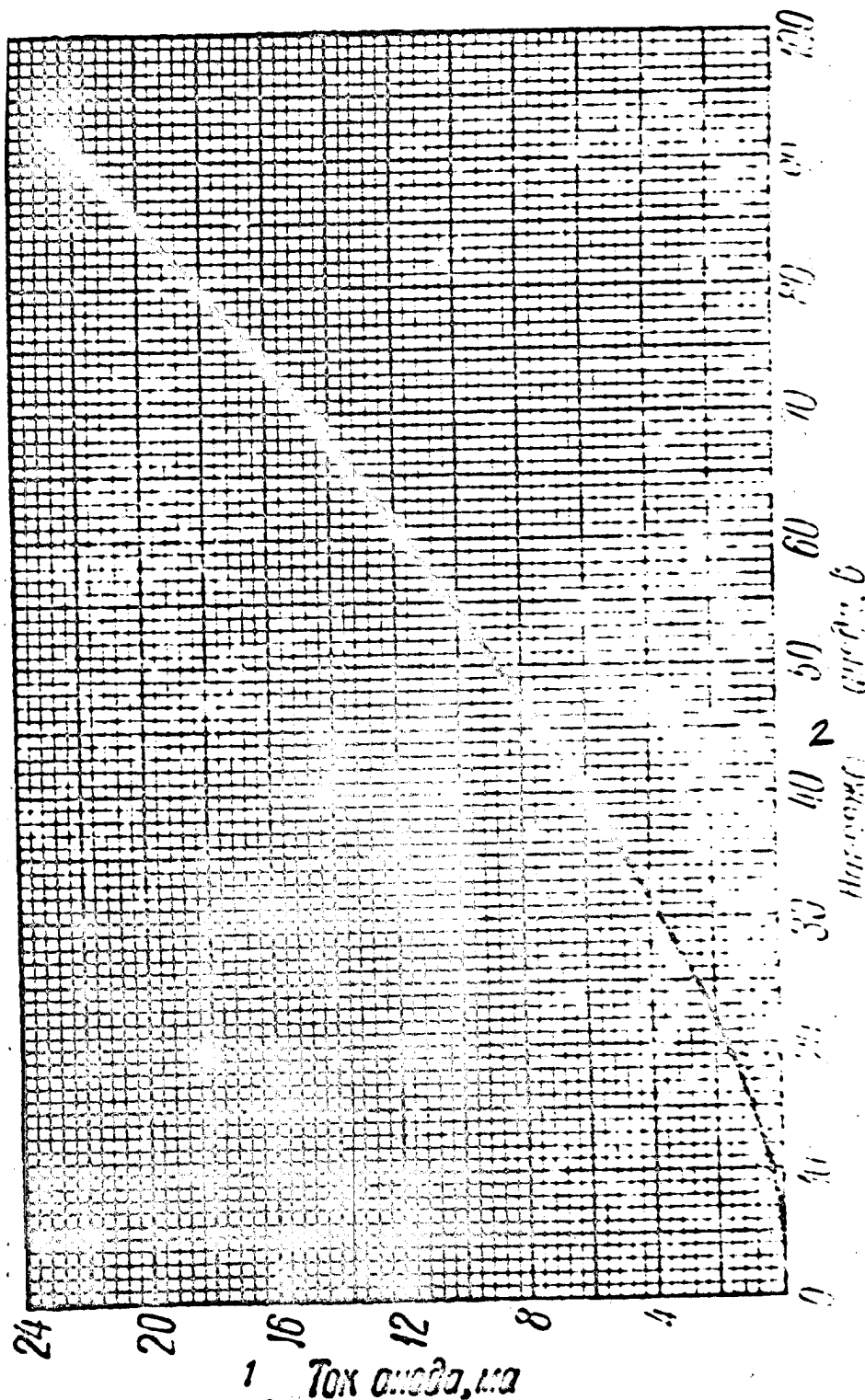
(Above material published April 1959, PKB, Sheet 1)

HIGH-VOLTAGE RECTIFIER

1Ts1S

Average Plate Curve

Filament voltage, 0.7 v.*



*Second digit following decimal point illegible.
 1) Plate current, ma; 2) plate voltage, v.

(Above material published April 1959, PKB, G-1)

HIGH-VOLTAGE RECTIFIER

1Ts7S

Basic function rectification of high-voltage pulses in television equipment.

Construction glass.

General Data

Cathode — oxide-coated filament-type

Maximum height

105 mm

Maximum diameter

32.8 mm

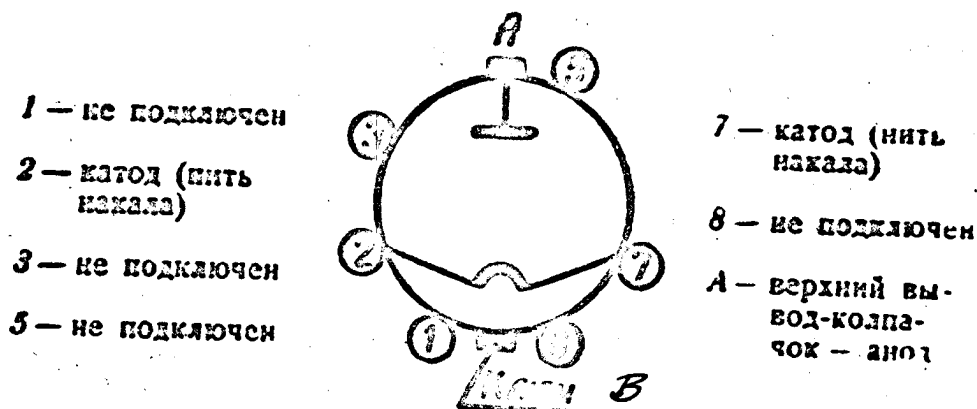
Maximum weight

35 grams

Base — Octal, Ts1-1-6A

Dimension drawing — 20S

Working position — vertical

Connection Diagram for Electrodes and Pins

1) Not connected; 2) cathode (filament); 3) not connected; 5) not connected; 7) cathode (filament); 8) not connected; A) Top cap — plate; B) Key.

Electrical Data

Filament voltage (~ or =)

1.25 v

Filament current

200 $\pm$ 20 ma

Cathode emission current*

no less than 4 ma

Service life

no less than 500 hours

Service-life criteria:

cathode emission current*

no less than 3.2 ma

plate peak inverse voltage

no less than 30 kv

*For plate voltage (=) 100 v

Interelectrode Capacitance

Plate-cathode

1.6 $\pm$ 0.5 μ f

(Above material published April 1959, PKB, Sheet 1)

HIGH-VOLTAGE RECTIFIER

1Ts7S

Maximum Permissible Operating Data

Maximum filament voltage { ~ or = }	1.4 v
Minimum filament voltage { ~ or = }	1.1 v
Maximum peak plate current	17 ma
Maximum peak inverse plate voltage	30 kv
Maximum rectified current	2 ma
Maximum frequency of rectified voltage	300 kc

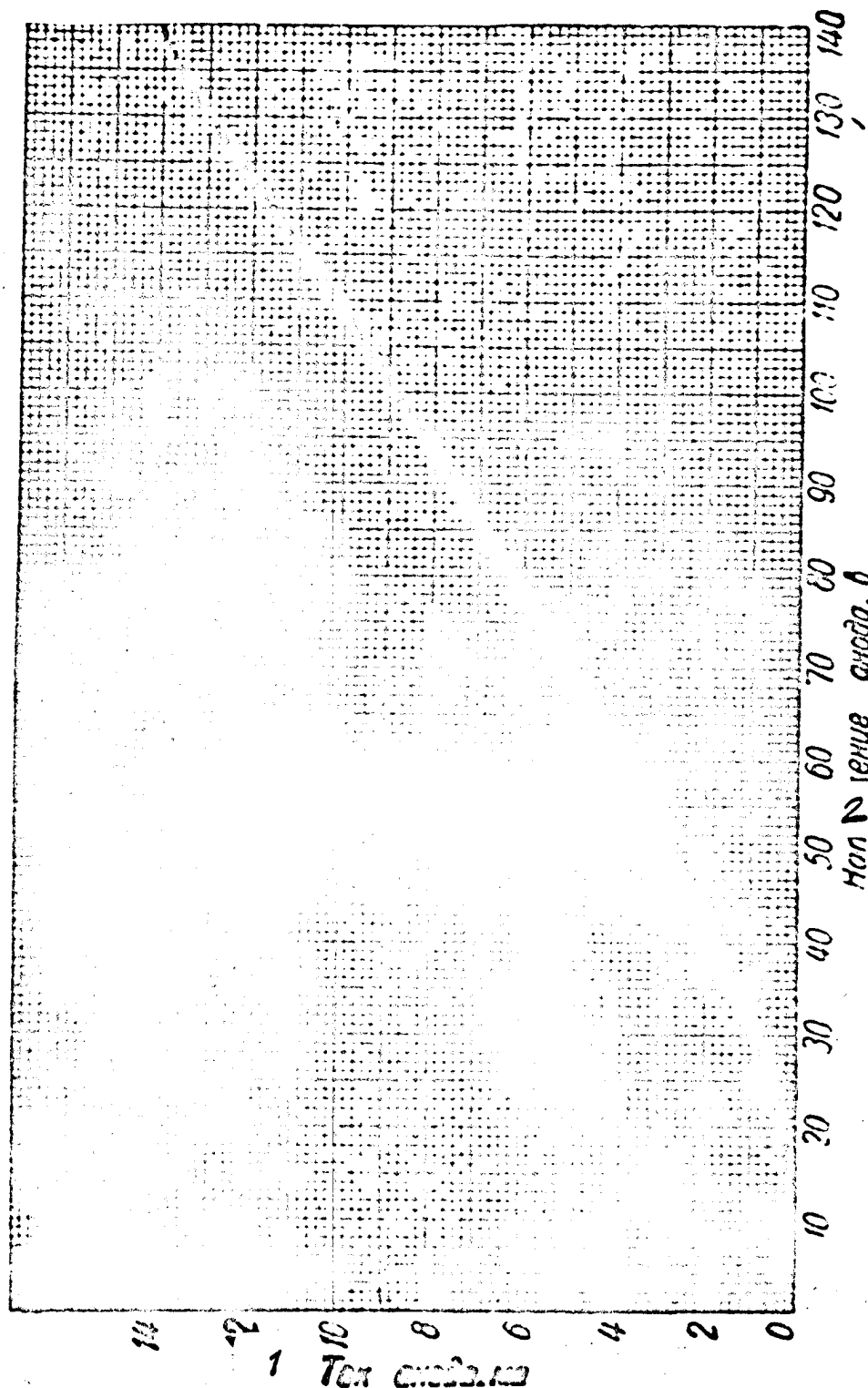
(Above material published April 1959, PKB, Sheet 1)

HIGH-FREQUENCY RECTIFIER

1Ts7S

Average Plate Characteristic

Filament voltage, 1.25 v.



1) Plate current, ma; 2) plate voltage, v.

(Above material published April 1959, PKB, G-1)

HIGH-VOLTAGE RECTIFIER

1Ts11P

Basic function rectification of voltage pulses from sweep fly-back in television equipment.

Construction glass miniature.

Basic Data

Cathode — oxide-coated filament-type

Maximum height

65 mm

Maximum diameter

19 mm

Maximum weight

15 grams

Number of pins

7

Cap lead — VK2-3

Dimension drawing — 10P

Operating position — vertical

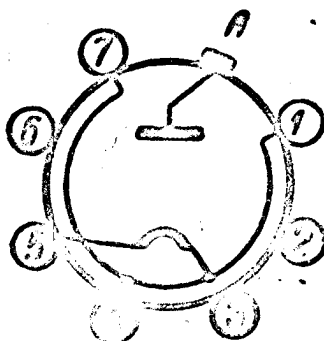
Connection Diagram for Electrodes and Pins

1 — КЭТОД (СИТЬ
ФИЛАМЕНТ)

2 — НЕ ПОДКЛЮЧЕН

3 — НЕ ПОДКЛЮЧЕН

4 — КЭТОД (СИТЬ
ФИЛАМЕНТ)



5 — КЭТОД (СИТЬ
ФИЛАМЕНТ)

6 — НЕ ПОДКЛЮЧЕН

7 — КЭТОД (СИТЬ
ФИЛАМЕНТ)

A — ВЫВОД-КОС-
ТЫЧКА — СТОЛ

1) Cathode (filament); 2) not connected; 3) not connected; 4) cathode (filament); 5) cathode (filament); 6) not connected; 7) cathode (filament); A) Cap lead — plate.

Electrical Data

Filament voltage ($\sim$ or $=$)

1.2 v

Filament current

200 $\pm$ 30 ma

Plate current *

no less than 4 ma

Service life

no less than 750 hours $\leftarrow$

Service-life criterion:

Plate current*

no less than 3.2 ma

*For plate voltage of 100 v.

Interelectrode Capacitance

Plate-cathode

1 μ f $\leftarrow$

$\leftarrow$ Change introduced.

(Above material published April 1959, PKB, Sheet 1)

HIGH-VOLTAGE RECTIFIER

1Ts11P

Maximum Permissible Operating Data

Maximum filament voltage (~ or =)	1.32 v
Minimum filament voltage (~ or =)	1.08 v
Maximum rectified current	300 μ a
Maximum peak plate current	2 ma
Maximum peak inverse plate voltage*	20 kv
Maximum horizontal sweep frequency	12 kc

*For a pulse length (vertical-sweep flyback) of not more than 12 μ sec.

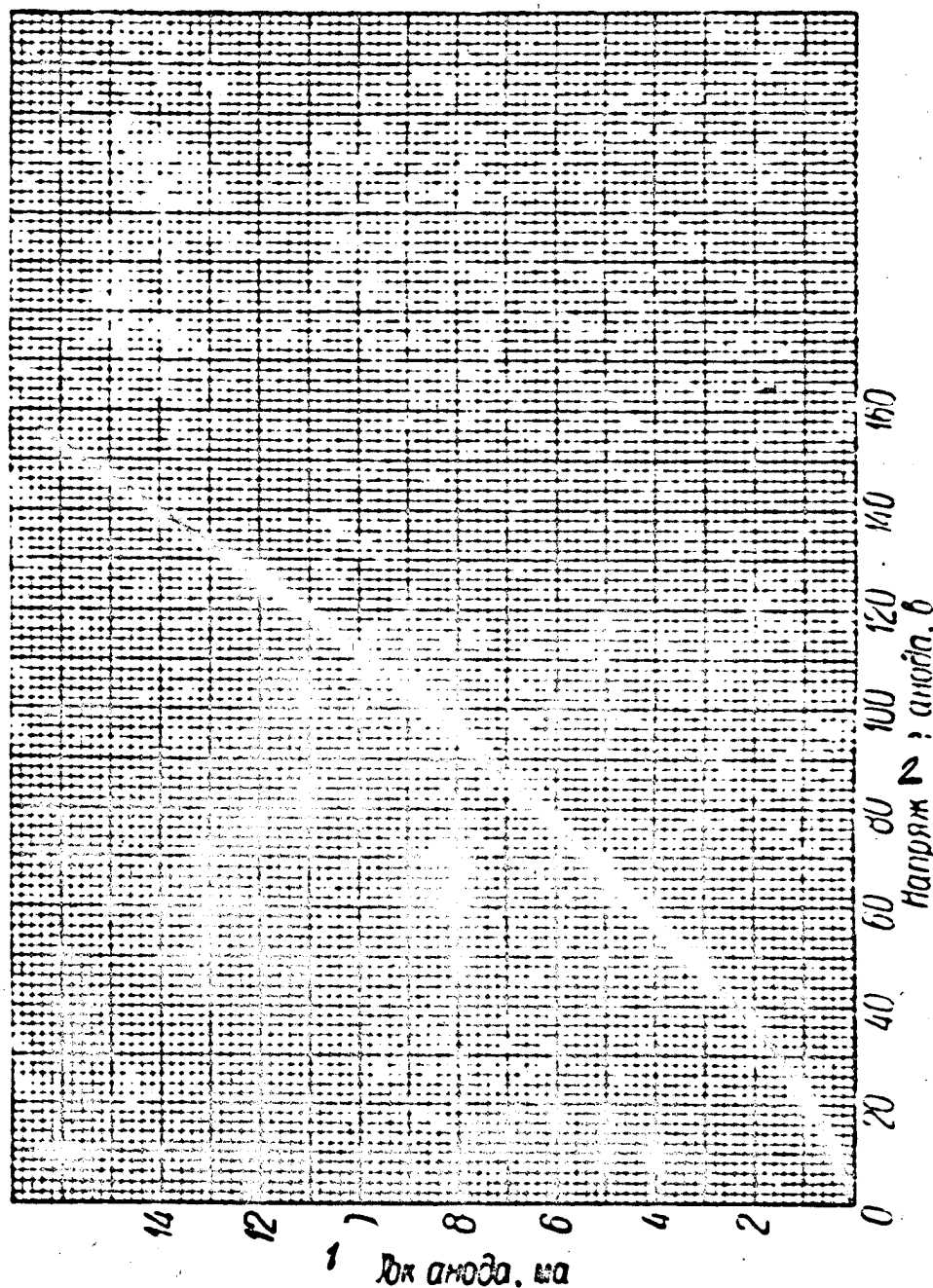
(Above material published April 1959, PKB, Sheet 1)

HIGH-VOLTAGE RECTIFIER

1Ts11P

Average Plate Characteristic

Filament voltage, 1.2 v.



1) Plate current, ma; 2) plate voltage, v.

(Above material published April 1959, PKB, G-1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

2Zh2M

Basic function radio-frequency voltage amplification.Construction glass.General Data

Cathode — oxide-coated filament-type

Maximum height

80 mm

Maximum diameter

30 mm

Maximum weight

30 grams

Base — octal, Ts1-3-5D

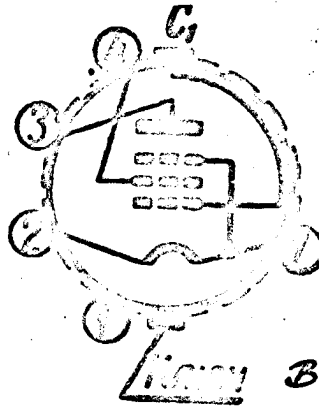
Cap lead — VK2-1

Dimension drawing — 22S

Connection Diagram for Electrodes and Leads1 — внешний экран
(металлизация)2 — катод (нить
накала)

3 — анод

4 — сетка вторая

7 — катод (нить
накала). сетка
третьяC₁ — верхний вы-
вод - колпа-
чок — сетка
первая

1) Internal shield (metallized); 2) cathode (filament); 3) plate;
4) screen; 7) cathode (filament), suppressor; 8) Key; C₁) top cap-
lead — control grid.

Electrical Data

Filament voltage (=)

Filament current

2 v
no more than 67 ma ←

Plate voltage (=)

120 v

Screen voltage (=)

70 v

Control-grid voltage (=)

-0.5 v

Plate current

1.9^{+0.7}_{-1.0} maPlate current with control-grid voltage of
-3.5 v

0.4 ma

Screen current

0.55 ± 0.25 ma

Transconductance

0.95 ± 0.25 ma/v

Transconductance with filament voltage of
1.8 vno less than 0.52 ma/v
1.0 megohm

Internal resistance

← Change introduced

(Above material published April 1959, PKB, Sheet 1)

Control-grid back current *	1.0 μ a
Cathode emission current**	no less than 8 ma
Cathode warm-up time	no more than 1.2 sec
Control-grid insulation resistance	no less than 20 megohms
Plate insulation resistance	no less than 20 megohms
Service life	500 hours
Service-life criteria:	
transconductance	no less than 0.56 ma/v
control-grid back current*	no more than 2 μ a

*With control-grid voltage of -1 v, and resistance in grid circuit of 0.5 megohms.

**With plate, control-grid, and screen voltage of 20 v.

Interelectrode Capacitances

Input	5.45 $\pm$ 1.55 μ mf
Output	8.1 $\pm$ 1.7 μ mf
Transfer	no more than 0.02 μ mf

Maximum Permissible Operating Data

Maximum filament voltage (=)	2.2 v
Minimum filament voltage (=)	1.8 v
Maximum plate voltage (=)	160 v
Maximum screen voltage (=)	90 v
Maximum plate dissipation	0.5 watt

(Above material published April 1959, PKB, Sheet 1)

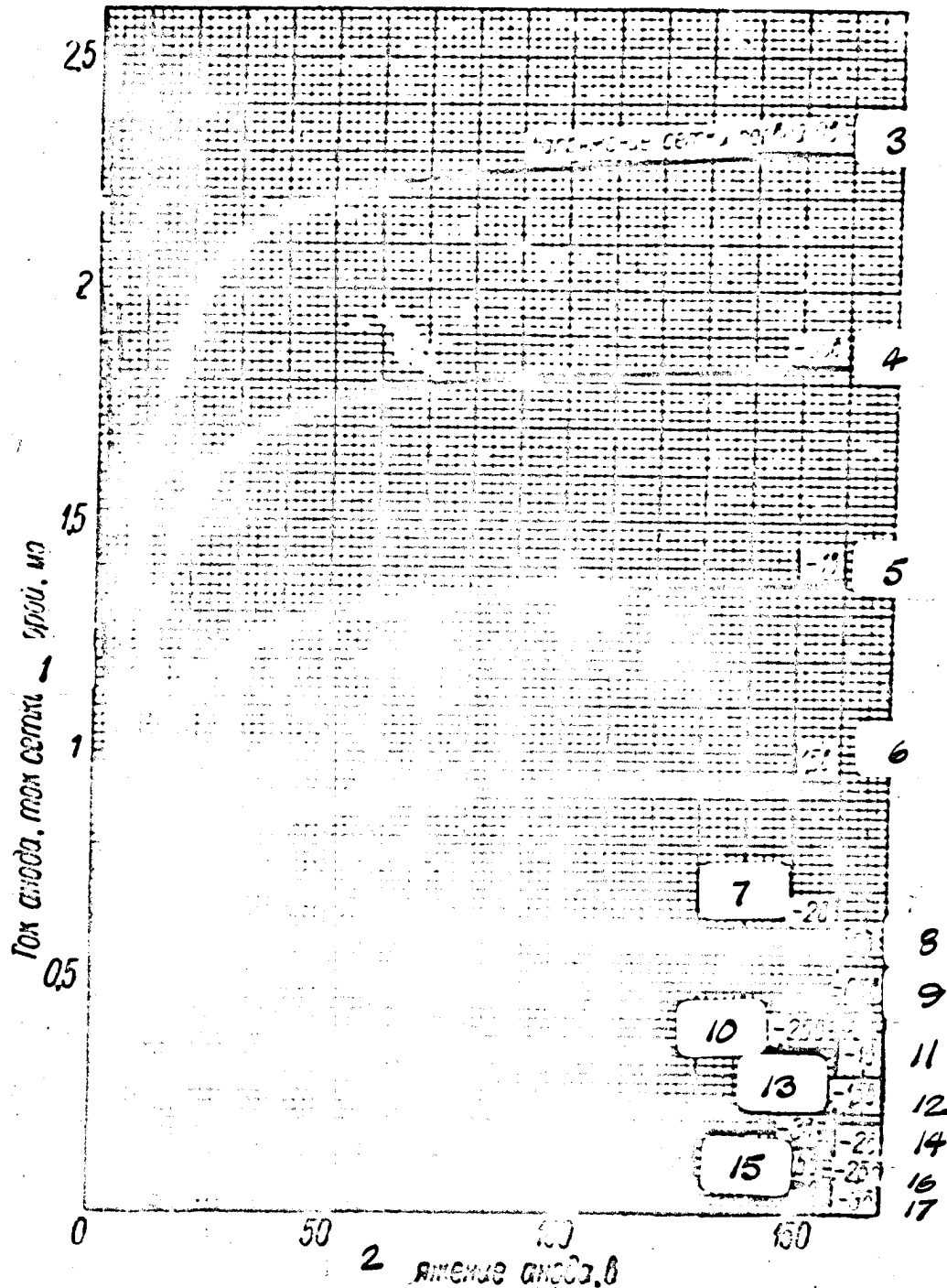
SHARP-CUTOFF RADIO-FREQUENCY PENTODE

2Zh2M

Average Characteristics

—— Plate
 ----- Grid-plate (for screen grid)

Filament voltage, 2 v; screen voltage, 70 v.



1) Plate current, screen current, ma; 2) plate voltage, v; 3) control-grid voltage, 0 v; 4) -0.5 v; 5) -1 v; 6) 1.5 v [sic]; 7) -2 v; 8) 0 v; 9) -0.5 v; 10) -2.5 v; 11) -1 v; 12) -1.5 v; 13) -3 v; 14) -2 v; 15) -3.5 v; 16) -2.5 v; 17) -3 v.
 (Above material published April 1959, PKB, G-1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

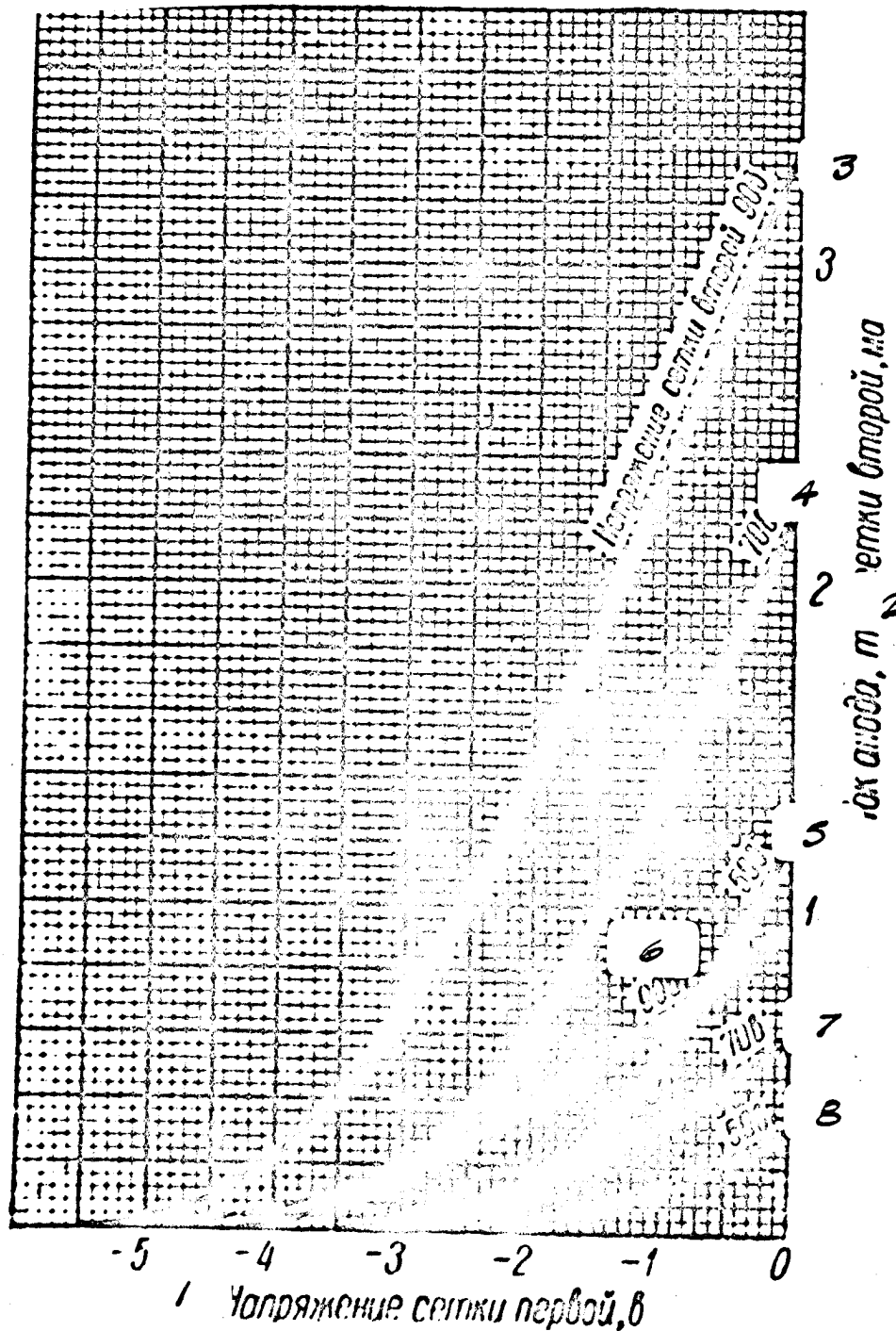
2Zh2M

Average Characteristics

— Plate-grid

----- Grid (for screen grid)

Filament voltage, 2 v; plate voltage, 120 v.



(Above material published April 1959, PKB, G-2)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

2Zh14B

Basic function radio-frequency voltage amplification.Construction glass subminiature.Basic Data

Cathode — Oxide-coated filament-type

Maximum height (without leads)

45 mm

Maximum diameter

10.2 mm

Number of leads

7 or 5 ←

Length of leads

no less than 35 mm

Length of plate lead

no less than 20 mm

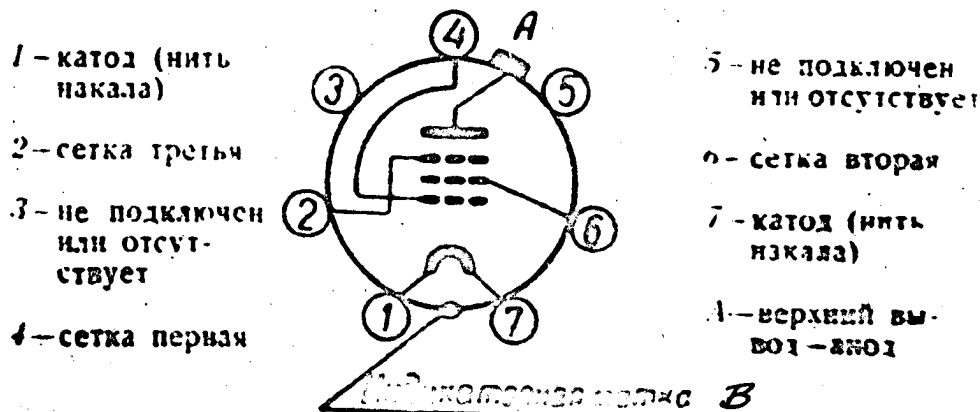
Lead diameter

about 0.4 mm

Maximum weight

4.5 gram

Dimension drawing — 10 B

Connection Diagram for Electrodes and Pins

1) Cathode (filament); 2) suppressor grid; 3) not connected, or lacking;
4) control grid; 5) not connected or lacking; 6) screen grid; 7) cathode (filament); A) Top lead — plate; B) Indicator mark.

Electrical Data

Filament voltage (=)

2.2 v

Filament current

30 ± 3 ma

Plate voltage (=)

90 v

Screen voltage (=)

45 v

Control-grid voltage (=)

0 v

Suppressor voltage (=)

0 v

Plate current

1.9 ± 0.6 ma

Screen current*

no more than 0.8 ma

Transconductance

1.25 ± 0.25 ma/v

Transconductance for filament voltage of 2 v no less than 0.85 ma/v

*Ratio of plate current to screen current should be no less than 3.

← Change introduced

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

2Zh14B

Negative control-grid voltage for plate current
 of 100 μ a (=) no more than 5 v
 Control-grid back current* no more than 0.2 μ a
 Vibration noise voltage** no more than 300 mv (eff)
 Service life 2000 hours
 Service-life criterion:
 transconductance no less than 0.85 ma/v

*For control-grid voltage of -1.5 v.
 **Across 10 kohm resistance at vibration frequency of 50 cps and
 .6-g acceleration.

Interelectrode Capacitances*

Input	no more than 4.5 μ mf
Output	no more than 6 μ mf
Transfer	no more than 0.015 μ mf
Plate-cathode	no more than 0.03 μ mf

*Measurements made inside shield.

Maximum Permissible Operating Data

Maximum filament voltage (for a decrease in service life to 400 hours) (=)	2.5 v ←
Minimum filament voltage (with a decrease in service life to 600 hours) (=)	1.8 v ←
Maximum plate voltage (=)	90 v
Maximum screen voltage (=)	90 v
Maximum plate dissipation	0.5 watt
Maximum screen dissipation	0.13 watt
Maximum cathode current	5 ma

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

SHARP CUTOFF RADIO-FREQUENCY PENTODE

2Zh15B

Basic function radio-frequency voltage amplification.Construction glass subminiature.Basic Data

Cathode — oxide-coated Filament-type	
Maximum height (without leads)	45 mm
Maximum diameter	10.2 mm
Number of leads	7 or 4
Lead length	no less than 35 mm ←
Plate-lead length	no less than 20 mm
Lead diameter	about 0.4 mm
Maximum weight	4.5 grams
Dimension drawing — 10B	

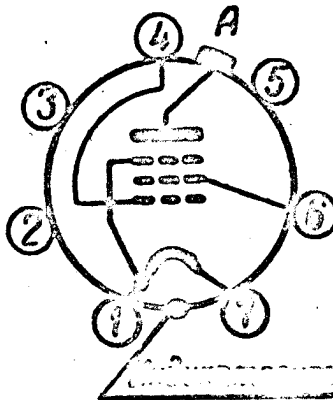
Connection Diagram for Electrodes and Leads

1—катод (нить
накала) и сетка
третья

2—не подключен
или отсутствует

3—не подключен
или отсутствует

4—сетка первая



5—не подключен
или отсутст-
вует

6—сетка вторая

7—катод (нить
накала)

A—верхний вы-
ход—анод

- 1) Cathode (filament) and suppressor; 2) not connected, or lacking;
3) not connected or lacking; 4) control grid; 5) not connected or
lacking; 6) screen grid; 7) cathode (filament); A) Top lead — plate;
B) indicator dot.

Electrical Data

Filament voltage (=)	2.2 v
Filament current	no more than 14 ma
Plate voltage (=)	60 v
Screen voltage (=)	45 v
Control-grid voltage (=)	0 v
Suppressor voltage (=)	0 v
Plate current	1.5 ± 0.5 ma
Screen current*	no more than 0.7 ma
Transconductance	no less than 0.7 ma/v

*Ratio of plate current to screen current should be no less than 2.

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

2Zh15B

Transconductance for filament voltage of 2 v	no less than 0.6 ma/v
Negative control-grid voltage for plate	
current of 100 μ a (=)	no more than 5 v
Control-grid back current*	no more than 0.2 μ a
Vibration-noise voltage**	no more than 300 mv (eff)
Service life	1000 hours
Service-life criterion:	
transconductance	no less than 0.6 ma/v

*For control-grid voltage of -1.5 v.

**Across 10 kohm resistance for vibration frequency of 50 cps and
-acceleration of 6 g.Interelectrode Capacitances*

Input	no more than 4 μ f
Output	no more than 5 μ f
Transfer	no more than 0.015 μ f

*Measurements carried out in shield.

Maximum Permissible Operating Data

Maximum filament voltage (with decrease in service life to 200 hours) (=)	2.4 v ←
Minimum filament voltage (with decrease in service life to 300 hours) (=)	2 v ←
Maximum plate voltage (=)	90 v
Maximum screen voltage (=)	60 v
Maximum plate dissipation	0.15 watt
Maximum screen dissipation	0.05 watt
Maximum cathode current	3 ma

← Change introduced.

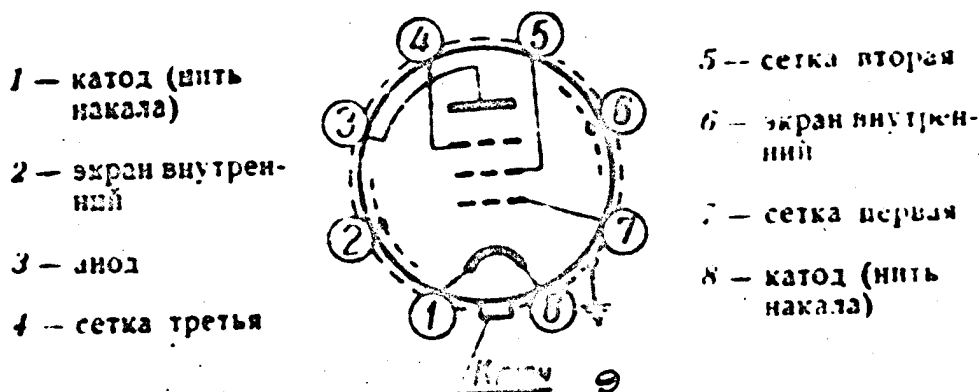
(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

2Zh27L

Basic function radio frequency voltage amplification (to 120 Mc).Construction glass, on flat stem with external metal shield.General Data

Cathode — oxide-coated filament-type
 Maximum height (without knob) 65 mm
 Maximum diameter 32 mm
 Maximum weight (without knob) 45 grams
 Base — shield with lock-type key, Ts4-2
 Dimension diagram — 3L

Connection Diagram for Electrodes and Pins

- 1) Cathode (filament); 2) internal shield; 3) plate; 4) suppressor;
 5) screen; 6) internal shield; 7) control grid; 8) cathode (filament);
 9) key;

Electrical Data

Filament voltage (=)	2.2 v
Filament current	57 ± 6 ma
Plate voltage (=)	120 v
Screen voltage (=)	45 v
Control-grid voltage (=)	0 v
Suppressor voltage (=)	0 v
Plate current	1.9 ± 0.6 ma
Plate current with screen voltage of 120 v	no less than 7 ma
Screen current	no more than 0.5 ma
Transconductance	1.25 ± 0.25 ma/v
Transconductance for filament voltage of 2.0 v	no less than 0.85 ma/v
Internal resistance	no less than 0.7 megohm

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

2Zh27L

Input resistance at frequency of 60 Mc*	15 kohm
Equivalent internal noise resistance	6 kohm
Negative first-grid voltage for 100 μ a plate current	no more than 4.8 v
Negative first-grid electron-current cutoff voltage	from 0 to 1 v
First-grid back current*	no more than 0.5 μ a
Cathode emission current**	no less than 9 ma
Service life	2000 hours
Service-life criteria:	
transconductance	no less than 0.85 ma/v
transconductance for 2-v filament voltage	no less than 0.7 ma/v

*For first-grid voltage of -1 v.
**With 10 volts on electrodes.

Interelectrode Capacitances

Input	$5.3^{+0.5}_{-0.6} \mu\text{mf}$
Output	$4.9 \pm 0.5 \mu\text{mf}$
Transfer	no more than 0.015 μmf
Plate-cathode .	no more than 0.01 μmf

Maximum Permissible Operating Data

Maximum filament voltage (=)	2.4 v
Minimum filament voltage (=)	2.0 v
Maximum plate voltage (=)	200 v
Maximum screen voltage (=)	120 v
Maximum plate dissipation	1 watt
Maximum screen dissipation	0.3 watt
Maximum cathode current	5 ma

(Above material published April 1959, PKB, Sheet 1)

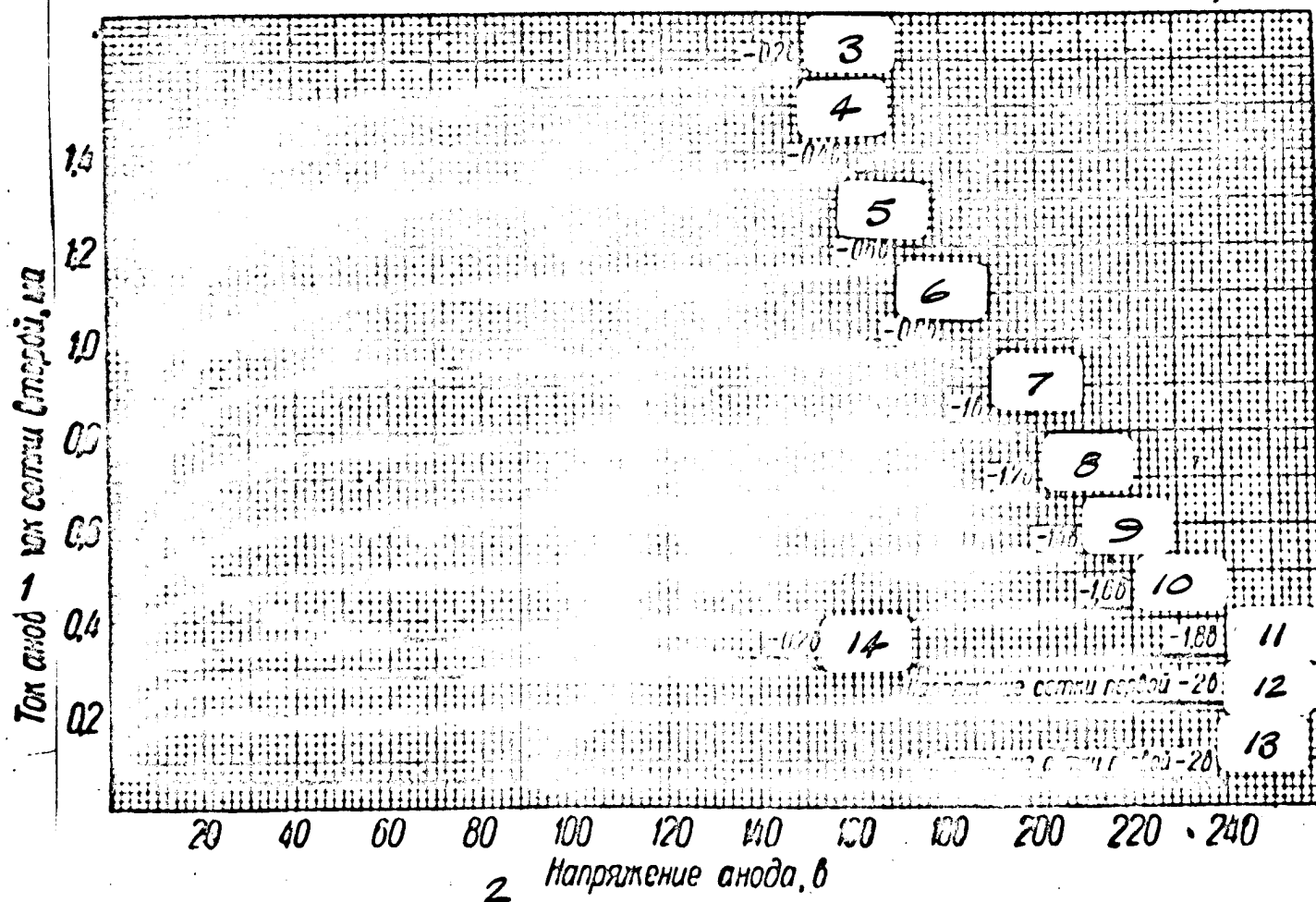
SHARP-CUTOFF RADIO-FREQUENCY PENTODE

2Zh27L

Average Characteristics

———— Plate
 ----- Grid-plate (for screen grid)

Filament voltage 2.2 v; screen voltage, 45 v.



- 1) Plate current, grid current, ma; 2) plate voltage, v; 3) -0.2 v;
 4) -0.4 v; 5) -0.6 v; 6) -0.8 v; 7) -1 v; 8) -1.2 v; 9) -1.4 v;
 10) -1.6 v; 11) -1.8 v; 12) first-grid voltage, -2 v; 13) first-grid
 voltage, -2 v; 14) -0.2 v.

(Above material published April 1959, PKB, G-1)

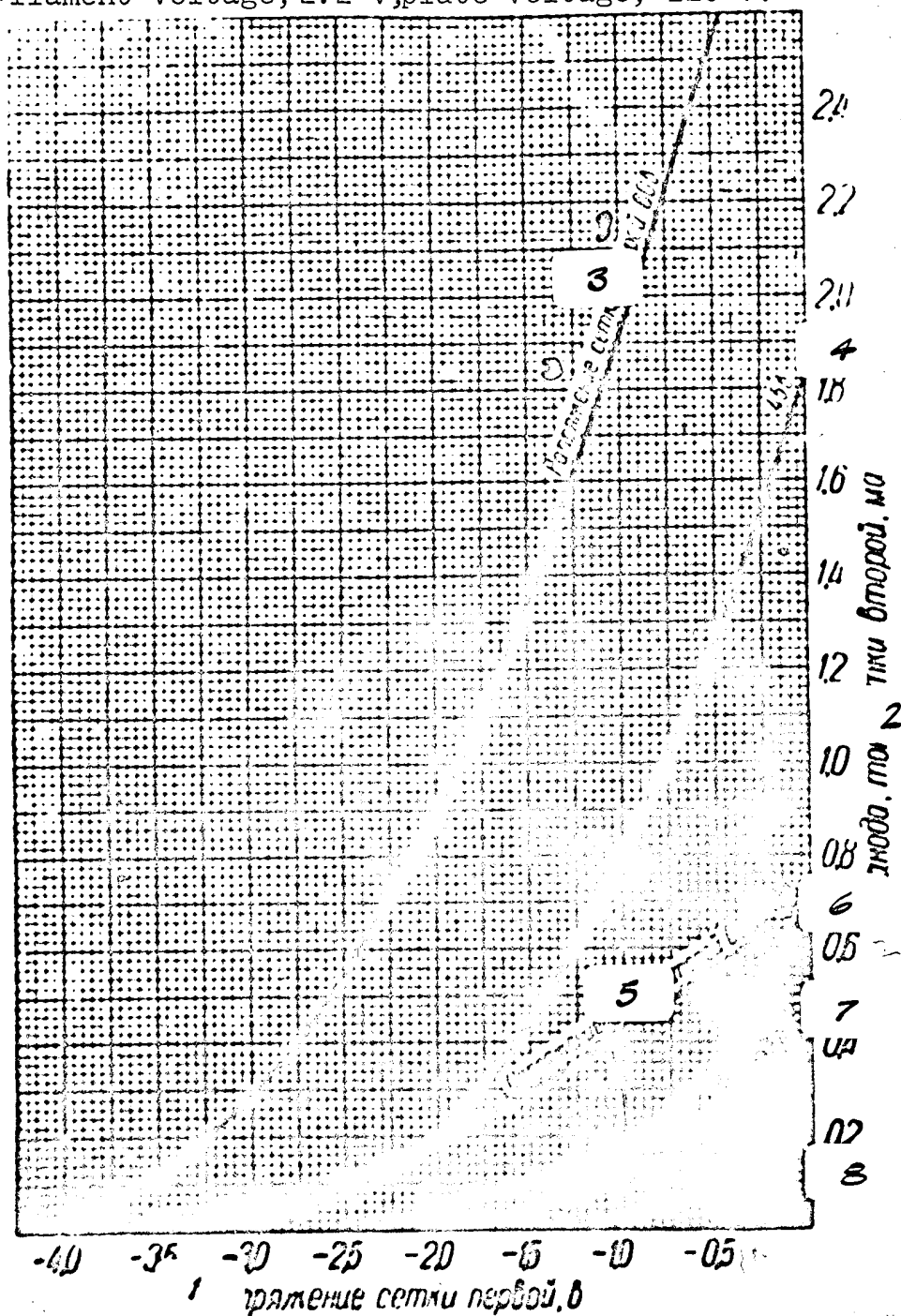
SHARP-CUTOFF RADIO-FREQUENCY PENTODE

2Zh27L

Average Grid Characteristics

—— Grid-plate
 ----- Grid (for screen grid)

Filament voltage, 2.2 v; plate voltage, 120 v.



- 1) First-grid voltage, v; 2) plate current, screen current, ma;
 3) screen voltage, 60 v; 4) 45 v; 5) screen voltage, 60 v; 6) 30 v;
 7) 45 v; 8) 30 v.

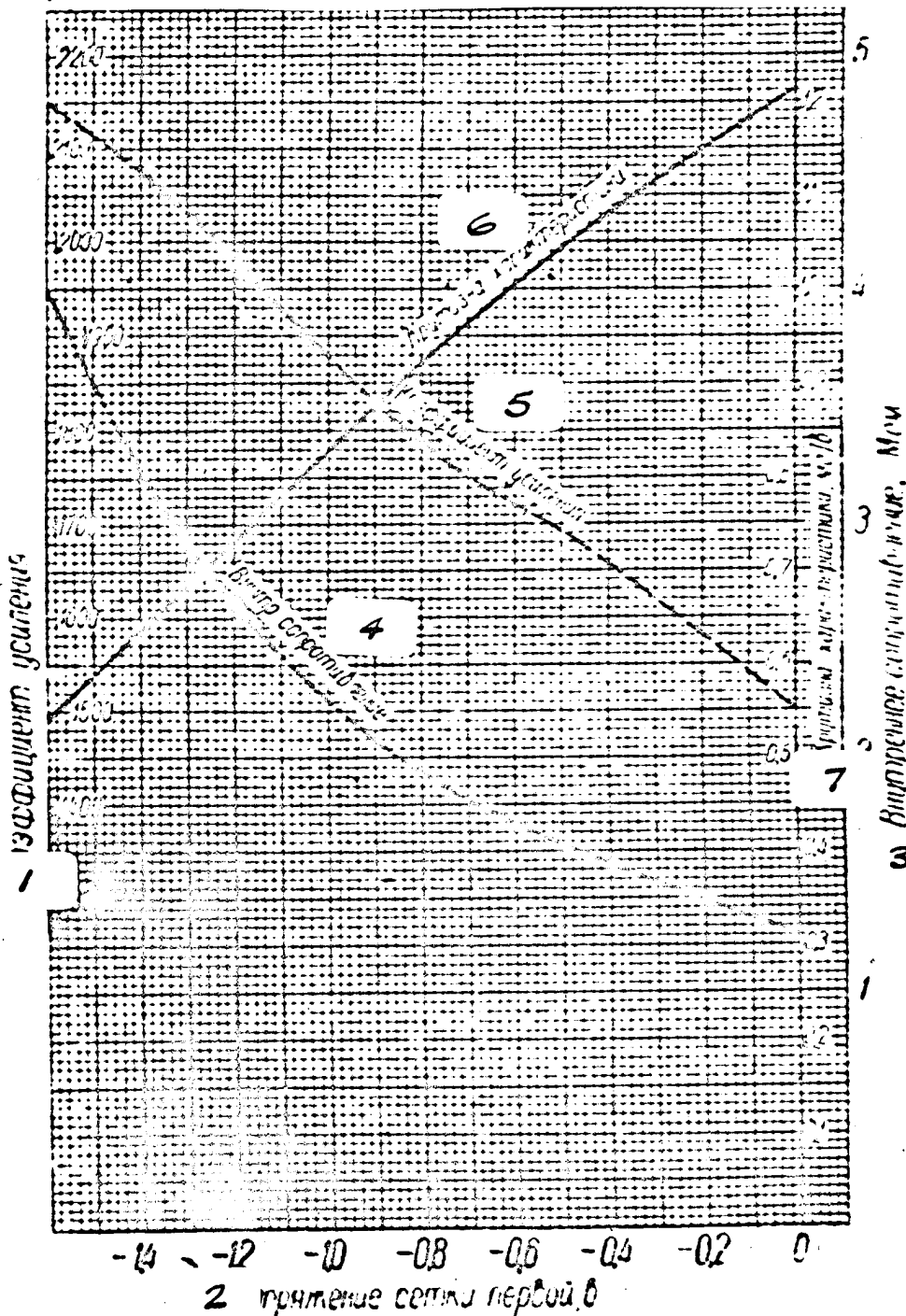
(Above material published April 1959, PKB, G-2)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

2Zh27L

Average Characteristics for Basic Constants

Filament voltage, 2.2 v; plate voltage, 120 v; grid voltage, 45 v.



- 1) Gain; 2) first-grid voltage, v; 3) internal resistance, megohm;
4) internal resistance; 5) transconductance; 6) gain.

(Above material published April 1959, PKB, G-3)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

2Zh27P

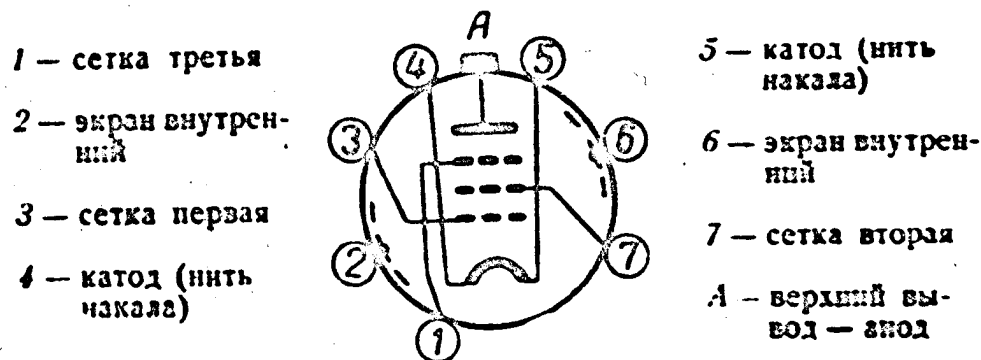
Basic function radio-frequency voltage amplification (up to 120 Mc).

Construction glass miniature with flexible leads.

General Data

Cathode — oxide-coated filament-type
 Maximum height (without leads)
 Maximum diameter
 Weight
 Number of leads
 Dimension drawing — 11P

51 mm
 19 mm
 12 grams
 8

Connection Diagram for Electrodes and Leads

1) Third grid; 2) internal shield; 3) first grid; 4) cathode (filament); 5) cathode (filament); 6) internal shield; 7) screen grid; A) top lead — plate.

Electrical Data

Filament voltage (=)	2.2 v
Filament current	57 ± 6 ma
Plate voltage (=)	120 v
Screen voltage (=)	45 v
Control-grid voltage (=)	0 v
Suppressor voltage (=)	0 v
Plate current	1.9 ± 6 ma
Plate current for screen voltage of 120 v	no less than 7 ma
Screen current	no more than 0.5 ma
Transconductance	no less than 1.0 ma/v
Transconductance for 2.0 v filament voltage	no less than 0.85 ma/v
Transconductance for filament voltage of 1.8 v	no less than 0.80 ma/v

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

2Zh27P

Internal resistance	1.6 megohm
Input resistance at 60 Mc	15 kohm
Equivalent internal noise resistance	7 kohm
Negative control-grid voltage for plate current of 100 μ a	no more than 4.8 v
Negative electron-current cutoff voltage for first grid	from 0 to 1 v
First-grid back current*	no more than 0.5 μ a
Cathode emission current	no less than 9 ma
Service life	2000 hours
Service-life criterion:	
Transconductance	no less than 0.85 ma/v

*For first-grid voltage of -1 v.

Interelectrode Capacitances

Input	4.5 $\pm$ 0.5 μ mf
Output	2.1 $\pm$ 0.5 μ mf
Transfer	no more than 0.015 μ mf
Plate-cathode	no more than 0.01 μ mf

Maximum Permissible Operating Data

Maximum filament voltage ($\approx$)	2.4 v
Minimum filament voltage ($\approx$)	2.0 v
Maximum plate voltage (=)	200 v
Maximum first-grid voltage (=)	120 v
Maximum plate dissipation	1 watt
Maximum screen dissipation	0.3 watt
Maximum cathode current	5 ma

(Above material published April 1959, PKB, Sheet 1)

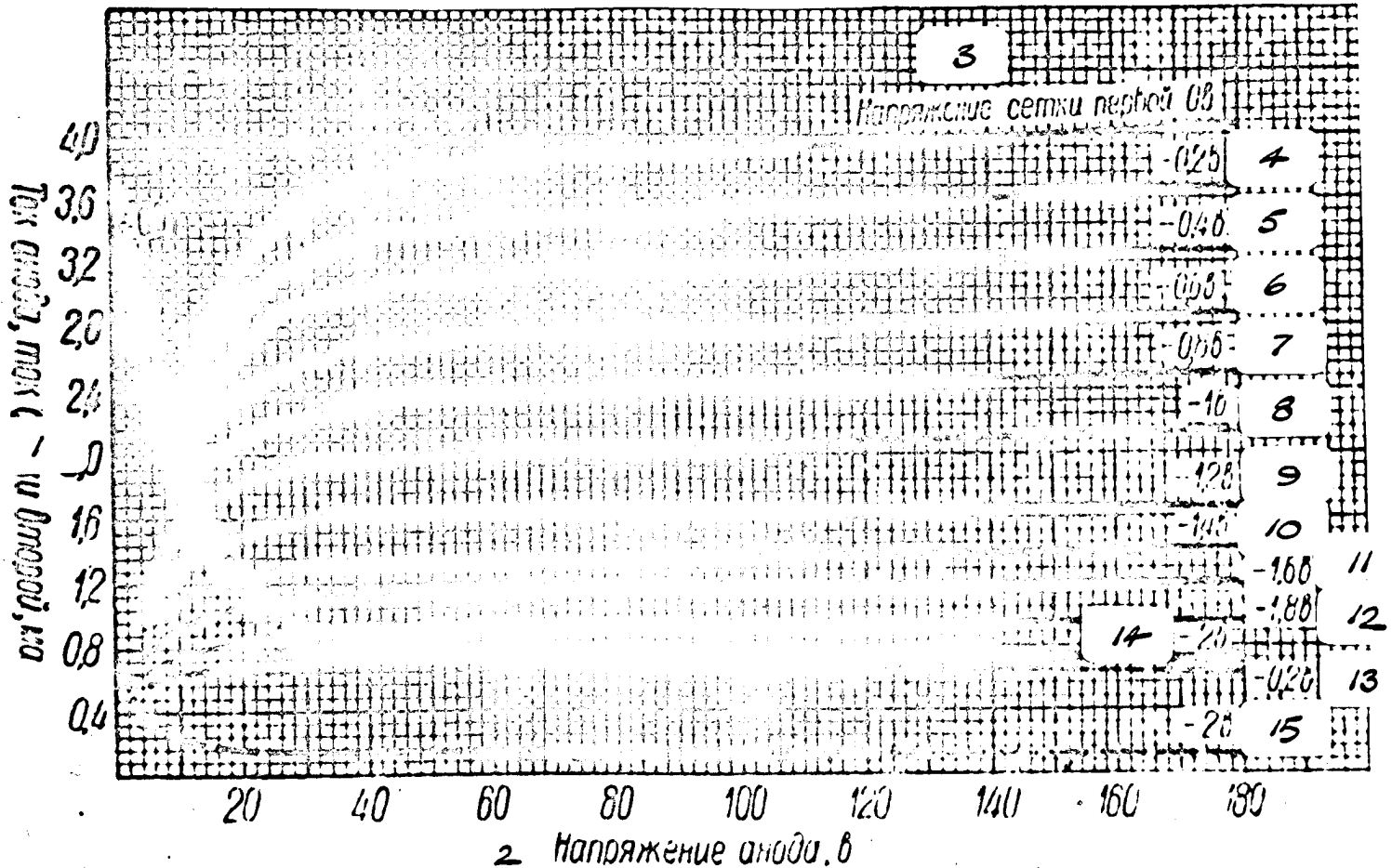
SHARP-CUTOFF RADIO-FREQUENCY PENTODE

2Zh27P

Average Characteristics

—— Plate
 ----- Grid-plate (for screen grid)

Filament voltage, 2.2 v; screen voltage, 45 v; suppressor voltage, 0 v.



1) Plate current, screen current, ma; 2) plate voltage, v; 3) screen voltage, 0 v; 4) -0.2 v; 5) -0.4 v; 6) -0.6 v; 7) -0.8 v; 8) -1 v; 9) -1.2 v; 10) -1.4 v; 11) -1.6 v; 12) -1.8 v; 13) -0.2 v; 14) -2 v; 15) -2 v.

(Above material published April 1959, PKB, G-1)

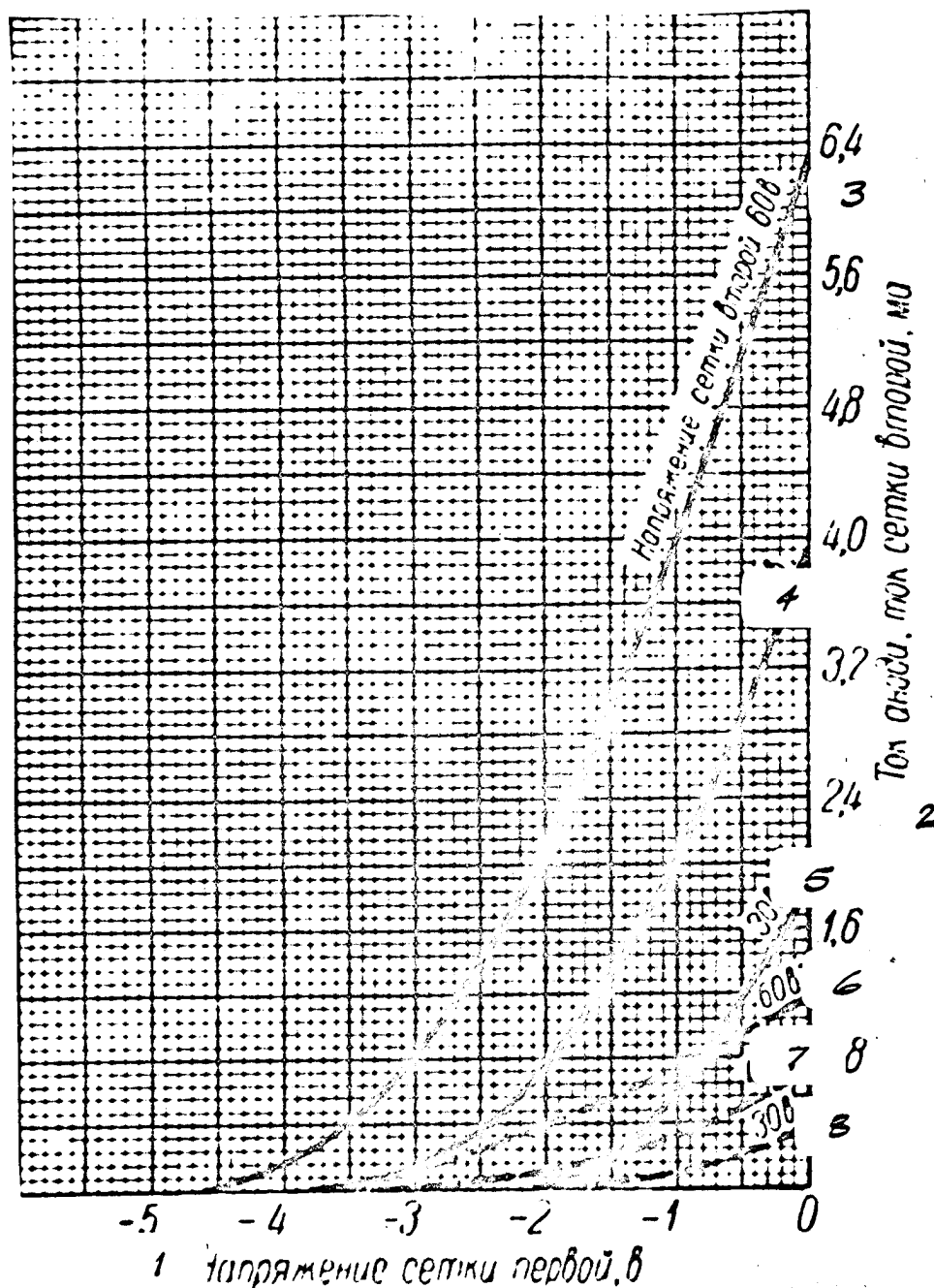
SHARP-CUTOFF RADIO-FREQUENCY PENTODE

2Zh27P

Average Characteristics

—— Grid-plate
 ----- Grid (for screen grid)

Filament voltage, 2.2 v; plate voltage, 120 v; suppressor voltage, 0 v.



- 1) First-grid voltage, v; 2) plate current, screen current, ma;
 3) screen voltage, 60 v; 4) 45 v; 5) 30 v; 6) 60 v; 7) 45 v;
 8) 30 v.

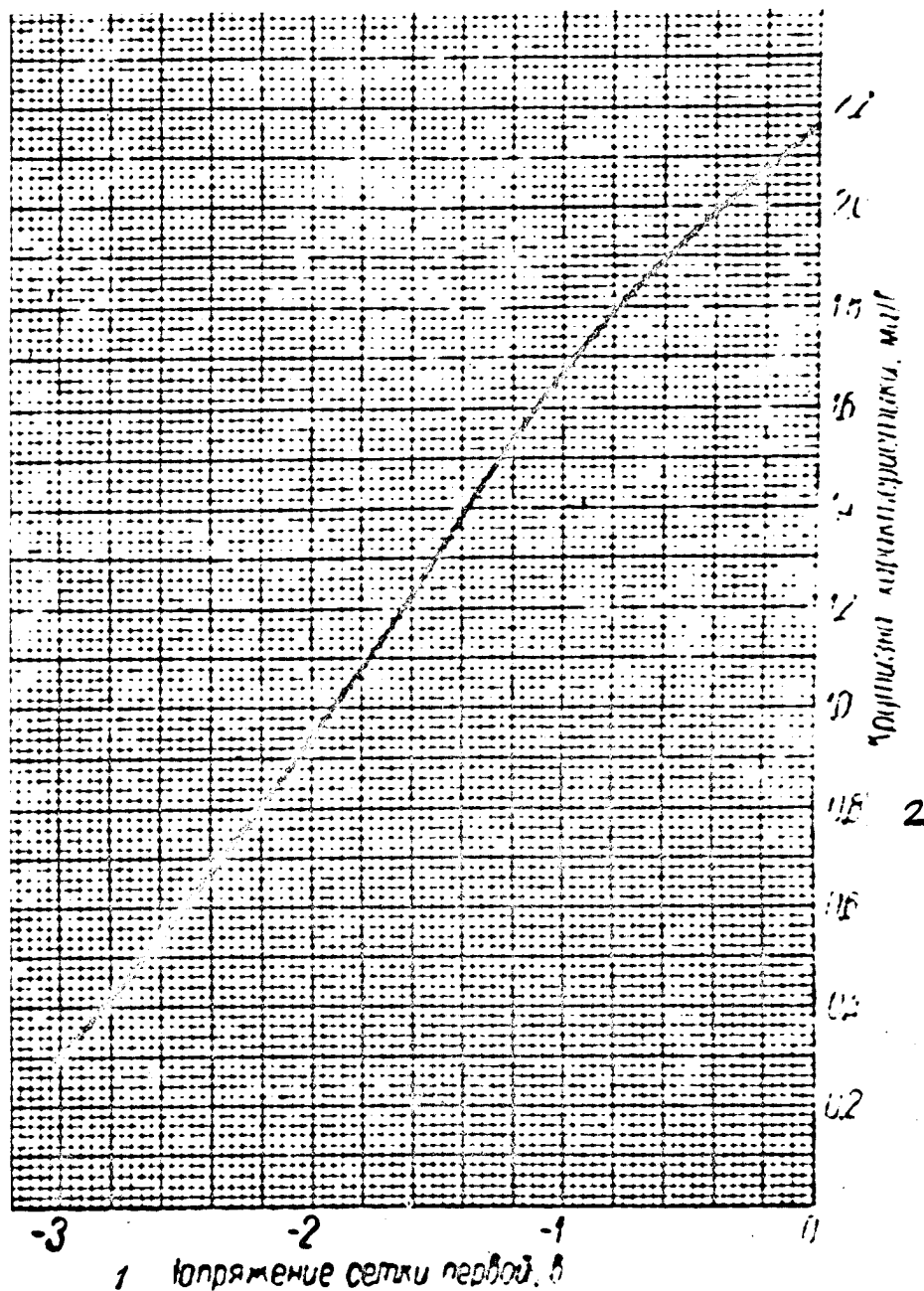
(Above material published April 1959, PKB, G-2)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

2Zh27P

Average Transconductance Curve as a Function of First-Grid Voltage

Filament voltage, 2.2 v; plate voltage, 120 v; screen voltage, 45 v; suppressor voltage, 0 v.



1) First-grid voltage, v; 2) transconductance, ma/v.

(Above material published April 1959, PKB, G-3)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

2K5M

Basic function radio-frequency voltage amplification.Construction glass.General Data

Cathode — oxide-coated filament-type

Maximum height

80 mm

Maximum diameter

30 mm

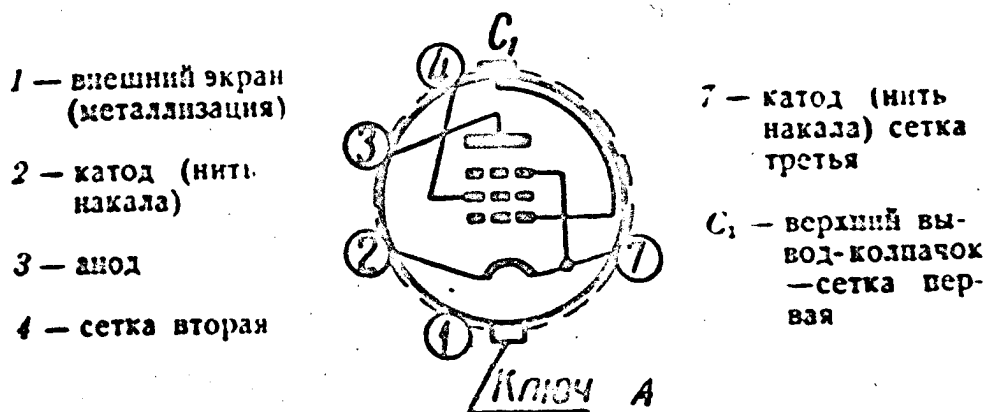
Maximum weight

30 grams

Base — octal, Tsl-3-5D

Lead-cap — VK2-1

Dimension drawing — 22 S

Connection Diagram for Electrodes and Leads

1) Internal shield (metallized); 2) cathode (filament); 3) plate;
4) screen; 7) cathode (filament), suppressor; C₁) top lead-cap — first-grid; A) key.

Electrical Data

Filament voltage (=)

Filament current

Plate voltage (=)

Screen voltage (=)

First-grid voltage (=)

Plate current

Screen current

Transconductance

Transconductance for first-grid voltage of
-10 vTransconductance for filament voltage of
1.8 v

Internal resistance

2.0 v
no more than 67 ma ←
120 v
70 v
-0.5 v
1.9 ± 0.7 ma
0.55 ± 0.25 ma
0.95 ± 0.25 ma/v
25 μa/v
no less than 0.56 ma/v ←
1 megohm

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

2K2M

First-grid back current*	no more than 1 μ a	
Cathode emission current**	no less than 8 ma	
Cathode warm-up time	no more than 0.8 sec	
Insulation resistance of first grid	no less than 20 megohm	
Plate insulation resistance	no less than 20 megohm	
Service life	500 hours	
Service-life criteria:		
transconductance	no less than 0.56 ma/v	
transconductance at filament voltage of 1.8 v	no less than 0.44 ma/v	←

*For first-grid voltage of -1 v and grid-circuit resistance of 0.5 megohm.

**For plate, screen, and first-grid voltage of 20 v.

Interelectrode Capacitances

Input	5.2 μ mf	←
Output	8.0 μ mf	←
Transfer	no more than 0.02 μ mf	

Maximum Permissible Operating Data

Maximum filament voltage (=)	2.2 v	
Minimum filament voltage (=)	1.8 v	
Maximum plate voltage (=)	160 v	
Maximum screen voltage (=)	90 v	
Maximum plate dissipation	0.5 watt	
Maximum screen dissipation	0.056 watt	←

← Change and addition introduced.

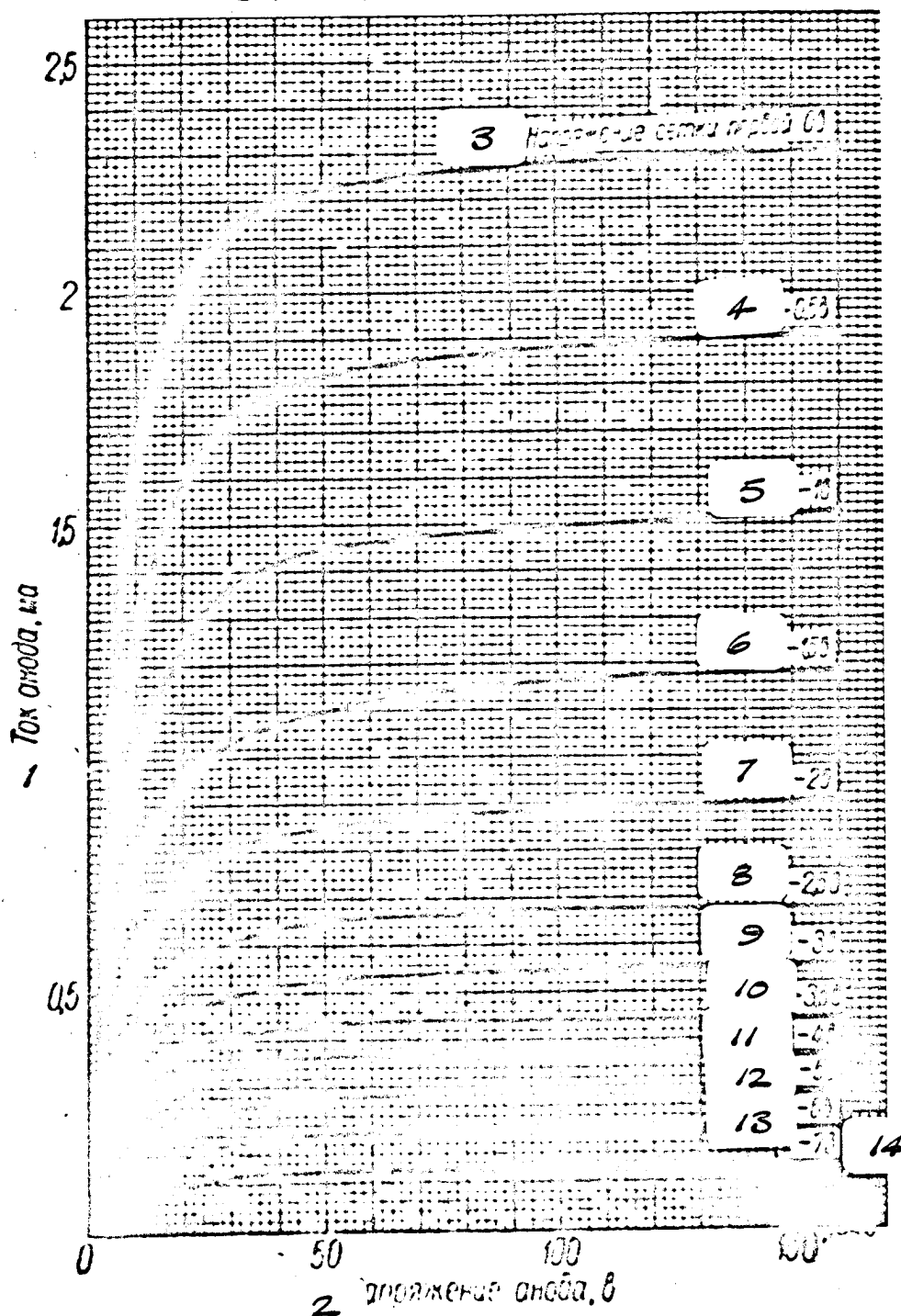
(Above material published April 1959, PKB, Sheet 1)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

2K2M

Average Plate Characteristics

Filament voltage, 2 v; Screen voltage, 70 v.



1) Plate current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) -2 v; 8) -2.5 v; 9) -3 v; 10) -3.5 v; 11) -4 v; 12) -5 v; 13) -6 v; 14) -7 v.

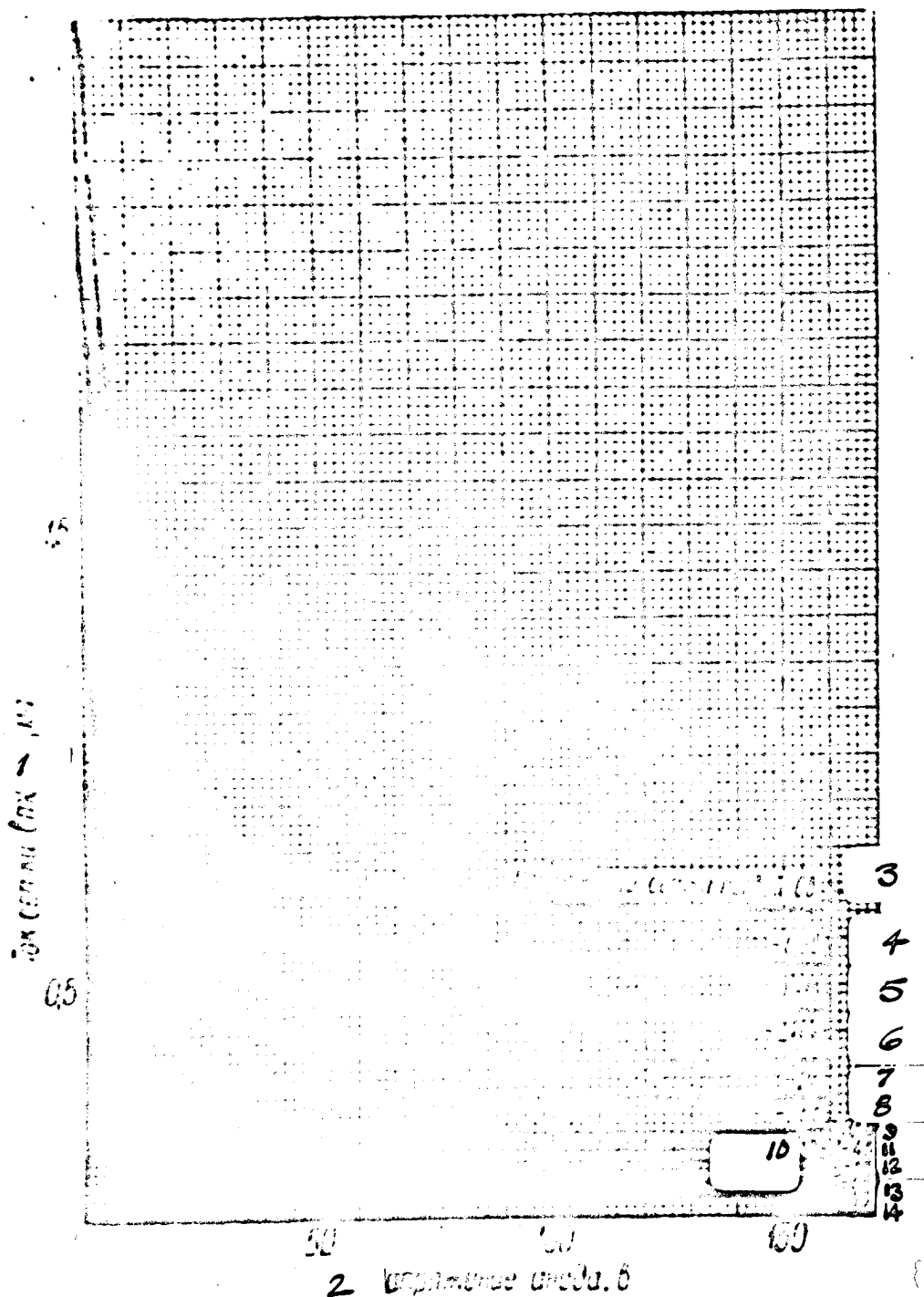
(Above material published April 1959, PKB, G-1)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

2K2M

Average Grid-Plate Characteristics (for screen grid)

Filament voltage, 2 v; screen voltage, 70 v.



1) Screen current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) -2 v; 8) -2.5 v; 9) -3.5 v; 10) -3 v; 11) -4 v; 12) -5 v; 13) -6 v; 14) -7 v.

(Above material published April 1959, PKB, G-2)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

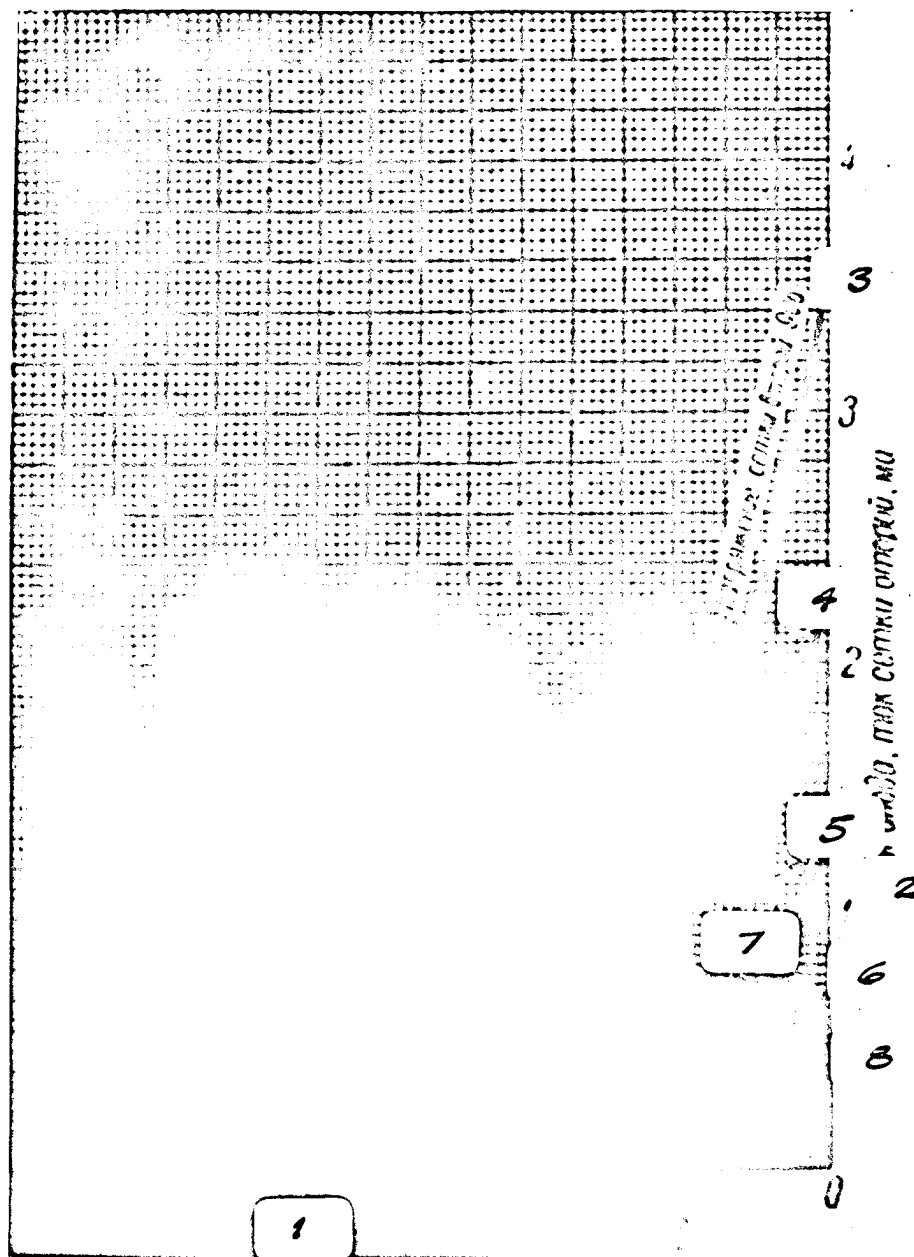
2K2M

Average Characteristics

—— Plate-grid

----- Grid (for screen grid)

Filament voltage, 2 v; plate voltage, 120 v.

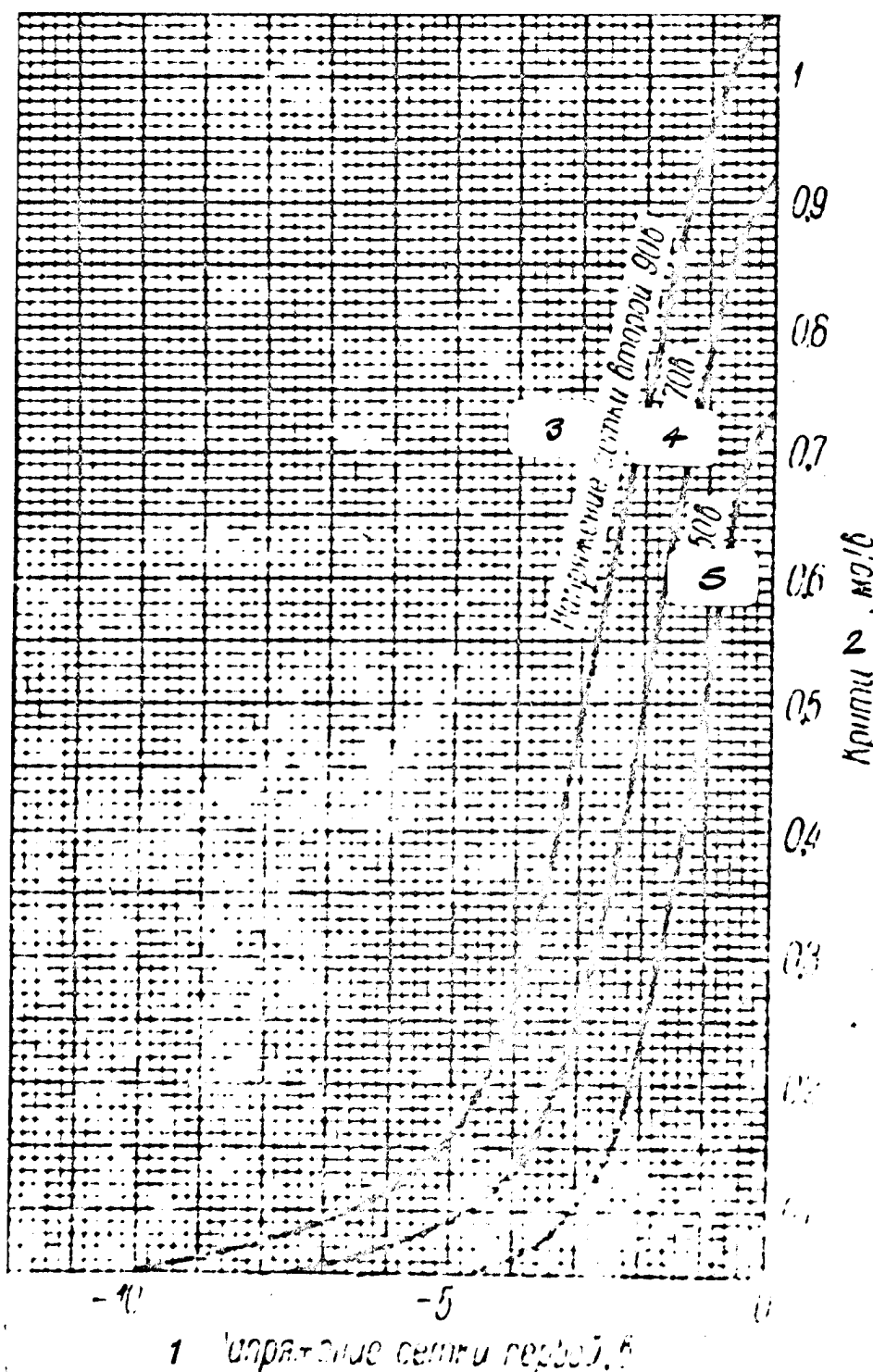


- 1) First-grid voltage, v; 2) plate current, screen current, ma;
 3) screen voltage, 90 v; 4) 70 v; 5) 50 v; 6) 70 v; 7) 90 v; 8) 50 v.

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

2K2M

Average Transconductance Curves as a Function of First-Grid Voltage
 Filament voltage, 2 v; plate voltage, 120 v.



1) First-grid voltage, v; 2) transconductance, ma/v; 3) screen voltage, 90 v; 4) 70 v; 5) 50 v.

Above material published April 1959, PKB, G-4)

BEAM-POWER TETRODE

2P1P

Output power*	no less than 210 mw
Output power for 0.95 v filament voltage*	no less than 140 mw
Nonlinear distortion**	no more than 7%
First-grid back current	no more than 1.0 μ a
Service life	500 hours
Service-life criterion: Output power*	no less than 135 mw

*With 3.2 v (eff) AC on the first grid, and a plate load resistance of 10 kohm.

**For an output power of 210 mw, a steady-state signal, taking into account the voltage drop across the plate load.

Interelectrode Capacitances

Input	$5.5 \pm 1.7 \mu\text{f}$
Output	$4.0 \pm 1.6 \mu\text{f}$
Transfer	no more than 0.5 μf

Maximum Permissible Operating Data

Filament connection	Parallel	Series
Maximum filament voltage (=)	1.4 v	2.8 v
Minimum filament voltage (=)	0.95 v	1.9 v
Maximum plate voltage (=)		100 v
Maximum screen voltage (=)		100 v
Maximum plate dissipation		1.1 watt
Maximum cathode current		15.5 ma
Maximum resistance in first-grid circuit		0.5 megohm

← Addition introduced.

(Above material published April 1959, PKB, Sheet 1)

BEAM-POWER TETRODE

2P1P

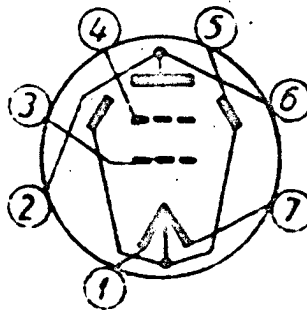
Basic function audio-frequency power amplification.Construction glass miniature.General Data

Cathode — oxide-coated filament-type
 Maximum height
 Maximum diameter
 Number of pins
 Dimension drawing — 5P

60 mm
 19 mm
 7

Connection Diagram for Electrodes and Pins

- 1 — катод (нить накала)
 2 — анод
 3 — сетка первая
 4 — сетка вторая



- 5 — средний вывод
 катода (нити
 накала) и лу-
 чеобразующие
 пластины
 6 — анод
 7 — катод (нить
 накала)

- 1) Cathode (filament); 2) plate; 3) control grid; 4) screen grid;
 5) cathode center cap (filament) and beam-forming plates; 6) plate;
 7) cathode (filament).

With both halves of the cathode (filament) connected in parallel, the positive filament voltage is connected to the first and seventh pins, and the negative filament voltage to the fifth pin. For a series connection, the positive filament voltage is applied to the seventh pin, and the negative filament voltage to the first pin.

Electrical Data

Filament Connection	Parallel	Series
Filament voltage (=)	1.2 v	2.4 v
Filament current	120 $\pm$ 14 ma	60 $\pm$ 7 ma
Plate voltage (=)	90 v	
Screen voltage (=)	90 v	
First-grid voltage (=)	-4.5 v	
Plate current	9.5 $\pm$ 3 ma	
Screen current	2.2 $\pm$ 0.9 ma	
Transconductance	no less than 1.7 ma/v	

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

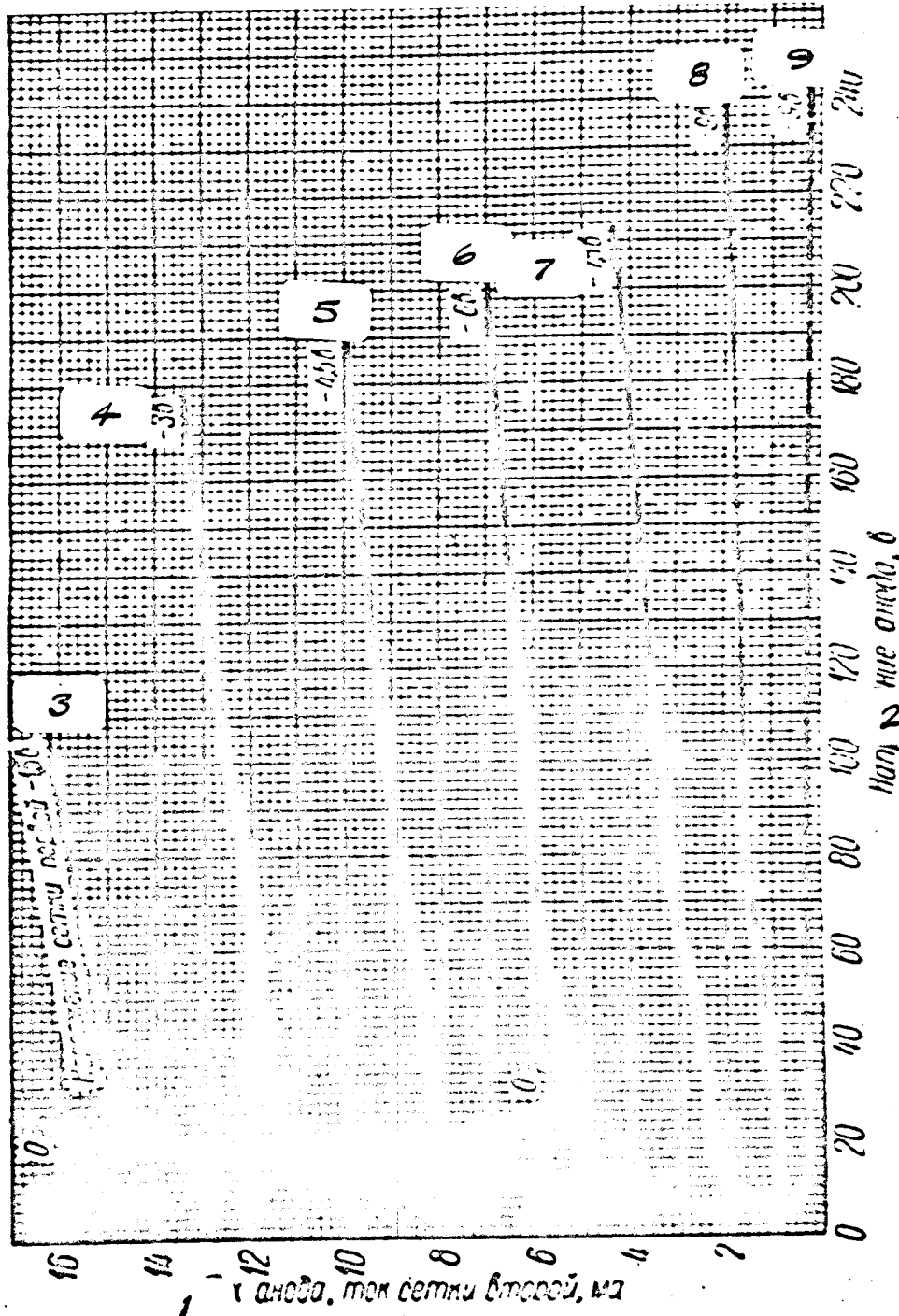
BEAM-POWER TETRODE

2P1P

Average Characteristics

———— Plate
 ----- Grid-plate (for screen grid)

Filament voltage, 1.2 v; screen voltage, 90 v.



1) Plate current, screen current, ma; 2) plate voltage, v; 3) first-grid voltage, -1.5 v; 4) -3 v; 5) -4.5 v; 6) -6 v; 7) -7.5 v; 8) -9 v; 10) -9 v.

(Above material published April 1959, PKB, G-1)

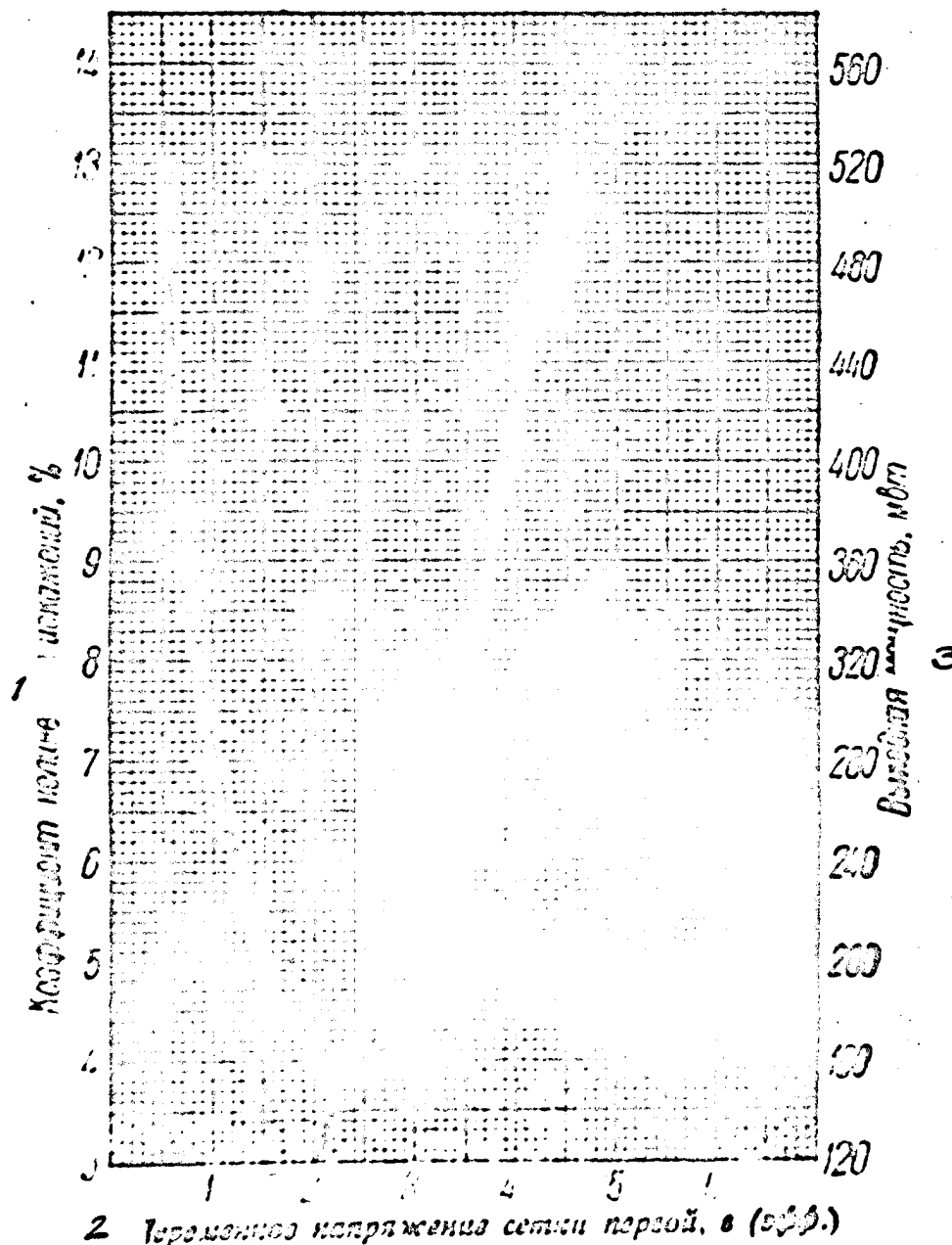
BEAM POWER TETRODE

2P1P

Average Dynamic Characteristics

(as a function of effective first-grid voltage)

————— Output power; ----- nonlinear distortion; filament voltage, 1.2 v; plate voltage, 90 v; grid voltage, 90 v; first-grid voltage, -4.5 v; load resistance, 10 kohm.



1) Nonlinear distortion, percent; 2) alternating first-grid voltage, v (eff); 3) output power, mw.

(Above material published April 1959, PKB, G-3)

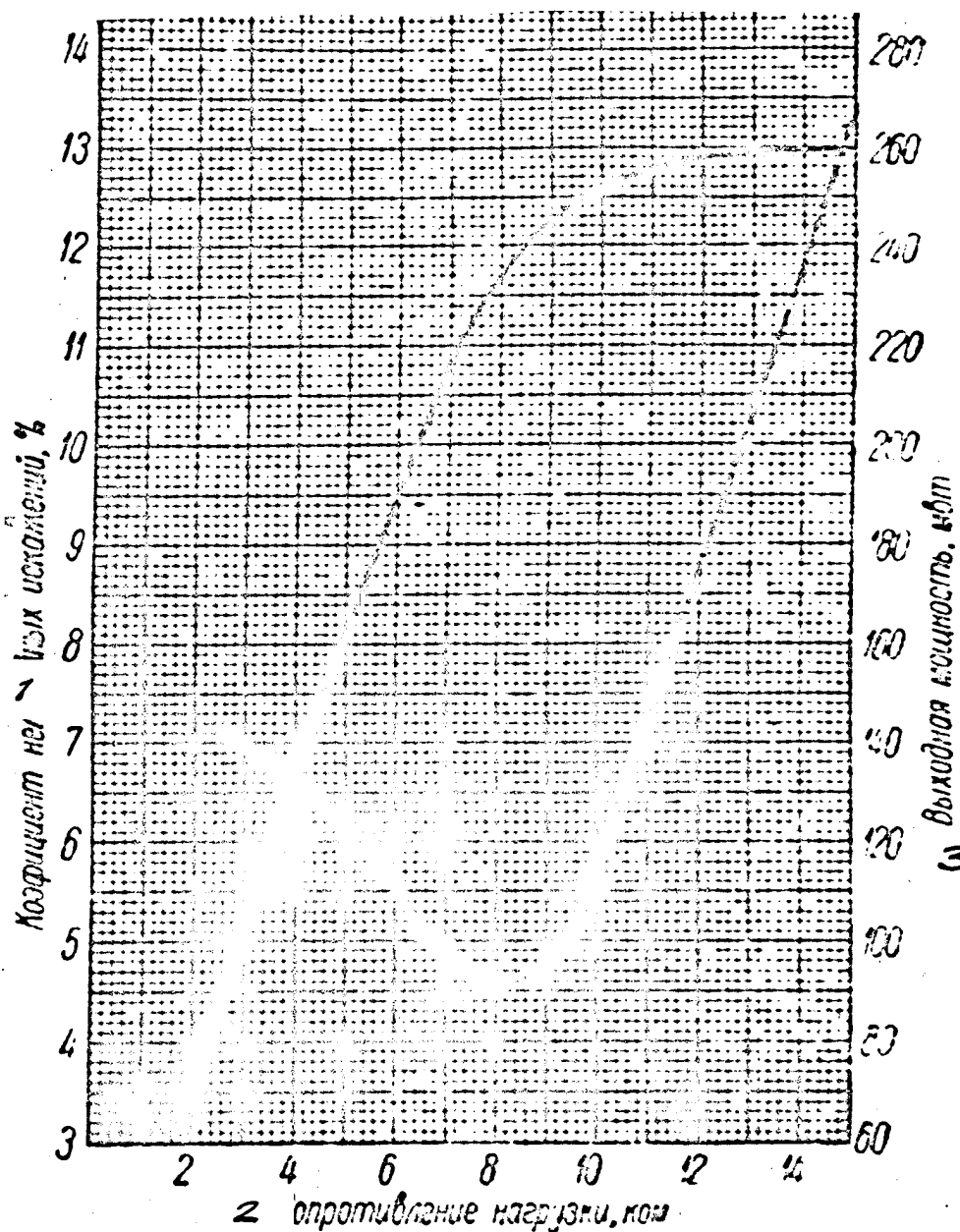
BEAM-POWER TETRODE

2P1P

Average Dynamic Characteristics

(as a function of load resistance)

----- Nonlinear distortion; ——— output power; filament voltage, 1.2 v; plate voltage, 90 v; screen voltage, 90 v; first-grid voltage, -4.5 v; signal voltage, 3.2 v (eff).



1) Nonlinear distortion, percent; 2) load resistance, kohm; 3) output power, mw.

(Above material published April 1959, PKB, G-3)

BEAM-POWER TETRODE

2P2P

Basic function audio-frequency power amplification.Construction glass miniature.General Data

Cathode — oxide-coated filament-type

Maximum height

60 mm ←

Maximum diameter

19 mm

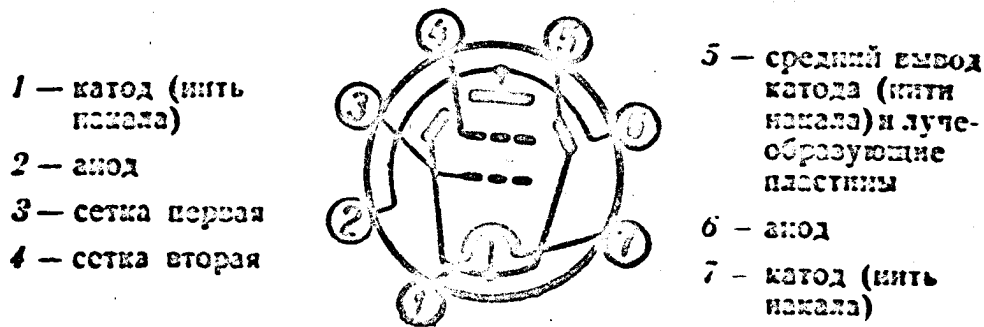
Weight

about 10 grams

Number of pins

7

Dimension drawing — 5P

Connection Diagram for Electrodes and Pins

- 1) Cathode (filament); 2) plate; 3) first grid; 4) second grid;
5) center tap of cathode (filament) and beam-shaping plates;
6) plate; 7) cathode (filament).

For the parallel connection of both halves of the cathode (filament) the positive filament voltage is connected to the first and seventh pins, and the negative filament voltage to the fifth pin. For a series connection, the negative filament voltage is connected to the first pin, and the positive filament voltage to the seventh pin.

Electrical Data

Filament connection	Series	Parallel
Filament voltage	2.4 v	1.2 v
Filament current	30 ± 3 ma	60 ± 6 ma
Plate voltage (=)	60 v	
Screen voltage (=)	60 v	
First-grid voltage (=)	-3.5 v	
Plate current	3.5 ± 1.2 ma	
Screen current	0.8 ma	
	(no more than 1.2 ma)	

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

BEAM-POWER TETRODE

2P2P

Transconductance	1.1 ma/v (no less than 0.9 ma/v)
Internal resistance	120 kohm
Output power *	no less than 50 mw
Service life	1000 hours
Service-life criterion: output power*	no less than 35 mw

*For plate-load resistance of 20 kohm and alternating first-grid voltage of 2.5 v (eff).

Interelectrode Capacitances

Input	3.7 μ f
Output	3.8 μ f
Transfer	0.4 μ f

Maximum Permissible Operating Data

Filament connection	Series	Parallel
Maximum filament voltage (=)	2.8 v	1.4 v
Minimum filament voltage (=)	1.8 v	0.9 v
Maximum power-supply voltage for plate and screen circuits (=)		250 v
Maximum plate voltage (=)		90 v
Maximum screen voltage (=)		90 v
Maximum cathode current (mean value)		7 ma
Maximum cathode current (peak value)		10 ma
Maximum plate dissipation		0.4 watt
Maximum resistance in first-grid circuit		2 megohm

Operating Conditions

	No. 1	No. 2
Plate and screen voltage (=), v	60	90
Negative first-grid voltage (=), v	3.5	7
Plate-load resistance, kohm	15	15
Alternating first-grid voltage, v (eff)	2.5	3.7 ←
Plate current, ma	3.7	5
Screen current, ma	1	1.4
Output power, mw	90	200
Nonlinear distortion, %	7.5	10

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

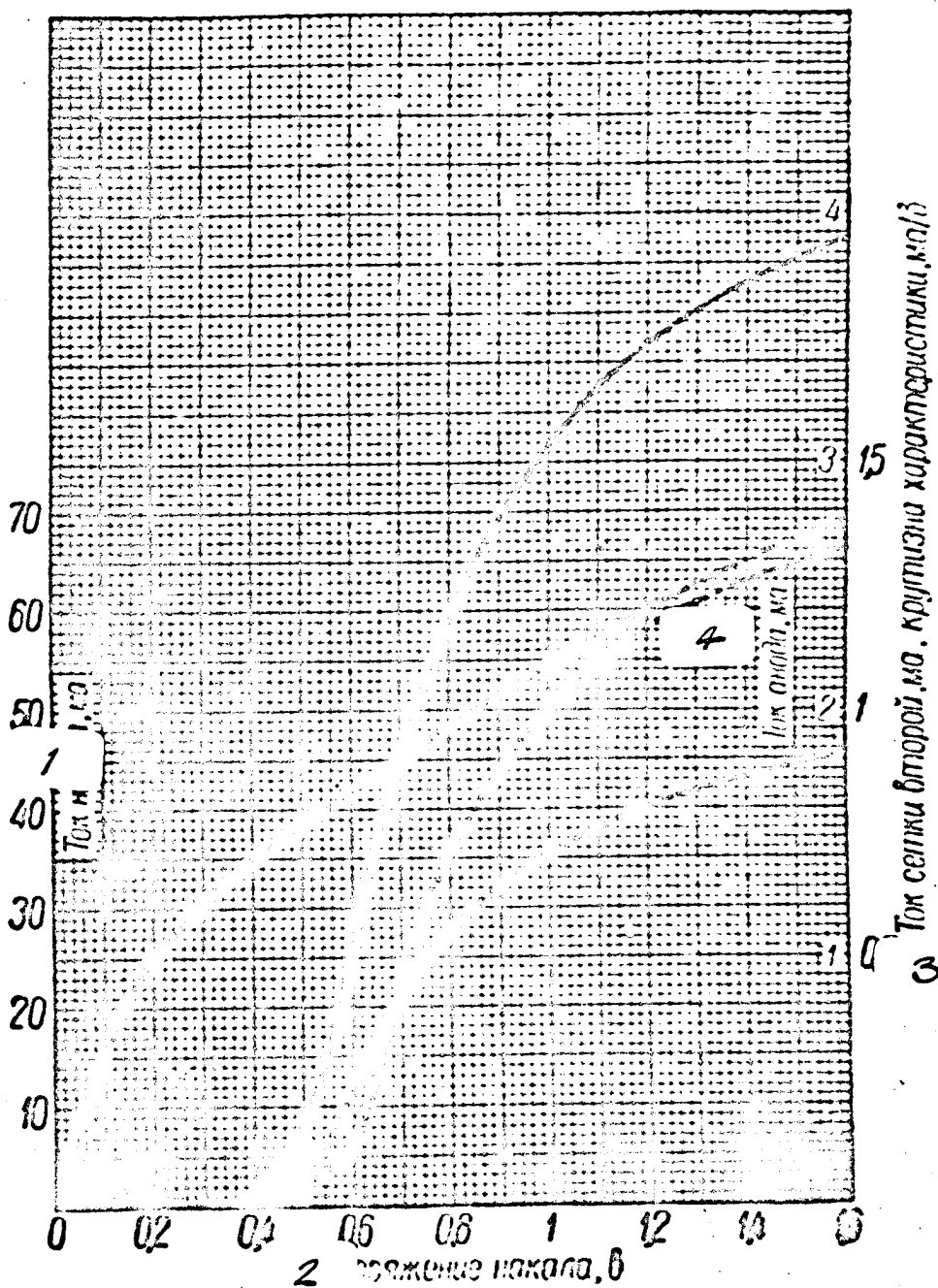
BEAM-POWER TETRODE

2P2P

Average Characteristics

(as a function of filament voltage)

—— Plate current; ----- screen current; - - - - - transconductance;
 - - - - - filament current; plate voltage, 60 v; screen voltage, 60 v;
 first-grid voltage, -3.5 v.



1) Filament current, ma; 2) filament voltage, v; 3) screen current, ma, transconductance, ma/v; 4) plate current, ma.

(Above material published April 1959, PKB, G-1)

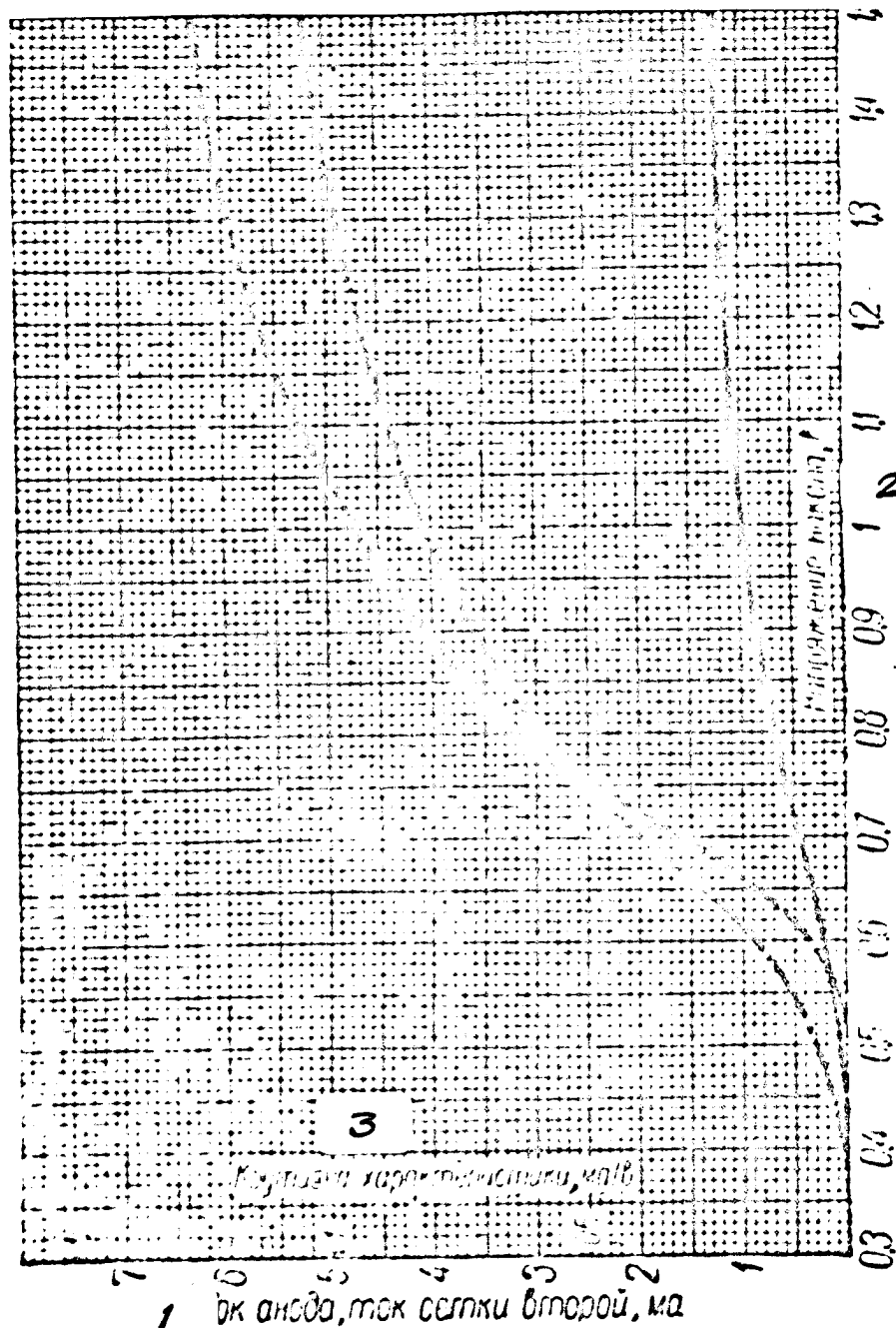
BEAM-POWER TETRODE

2P2P

Average Characteristics

(as a function of filament voltage)

----- Plate current; ——— screen current; ----- transconductance; plate voltage, 90 v; screen voltage, 90 v; first-grid voltage, -7 v.



1) Plate current, screen current, ma; 2) filament voltage, v; 3) transconductance, ma/v.

(Above material published April 1959, PKB, G-2)

BEAM-POWER TETRODE

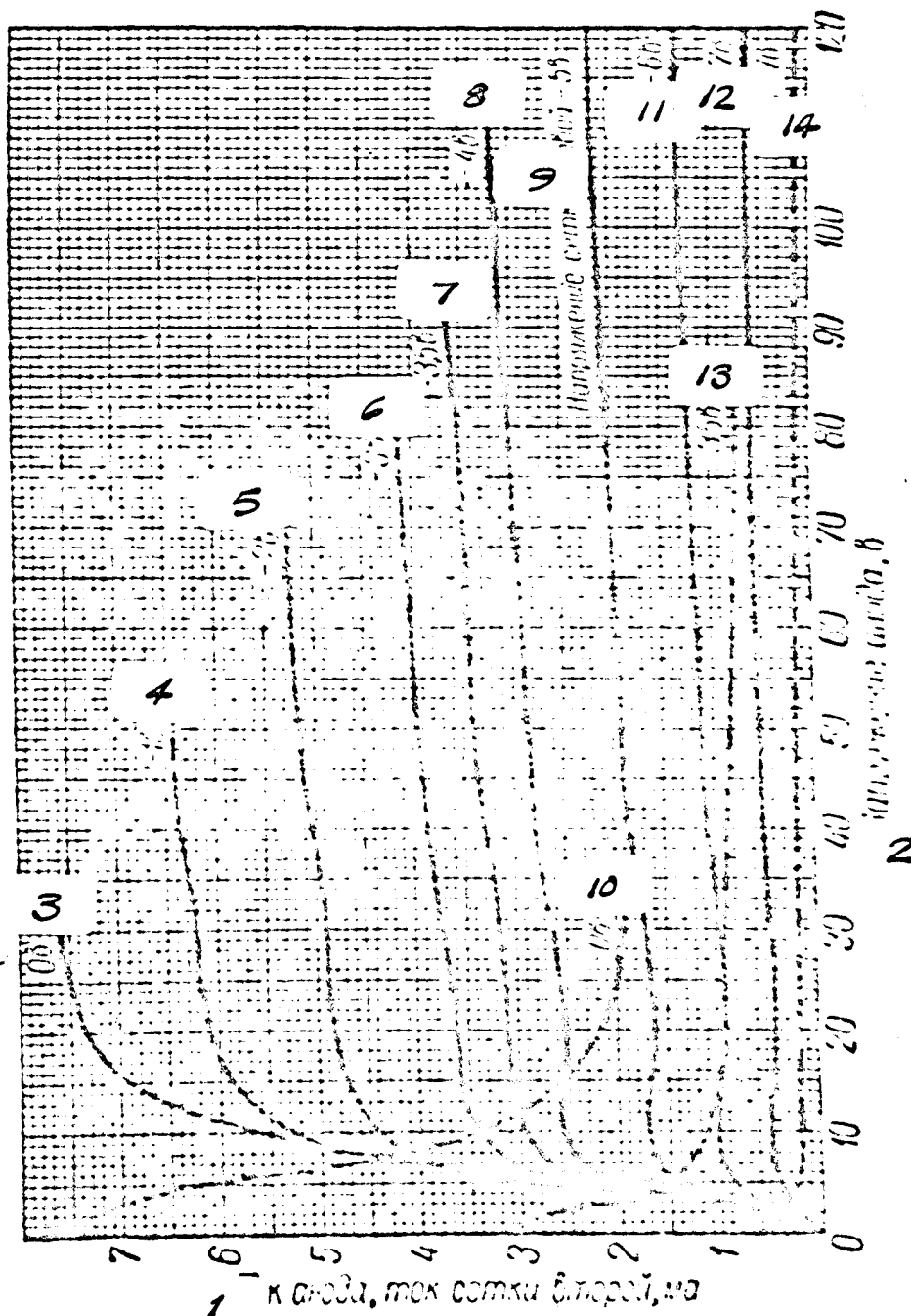
2P2P

Average Characteristics

——— Plate

----- Grid-plate (for screen grid)

Filament voltage, 1.2 v; screen voltage, 60 v.



- 1) Plate current, screen current, ma; 2) plate voltage, v; 3) 0 v;
 4) -1 v; 5) -2 v; 6) -3 v; 7) -3.5 v; 8) -4 v; 9) first-grid voltage,
 -5 v; 10) 0 v; 11) -6 v; 12) -7 v; 13) -3.5 v; 14) -7 v.

(Above material published April 1959, PKB, G-3)

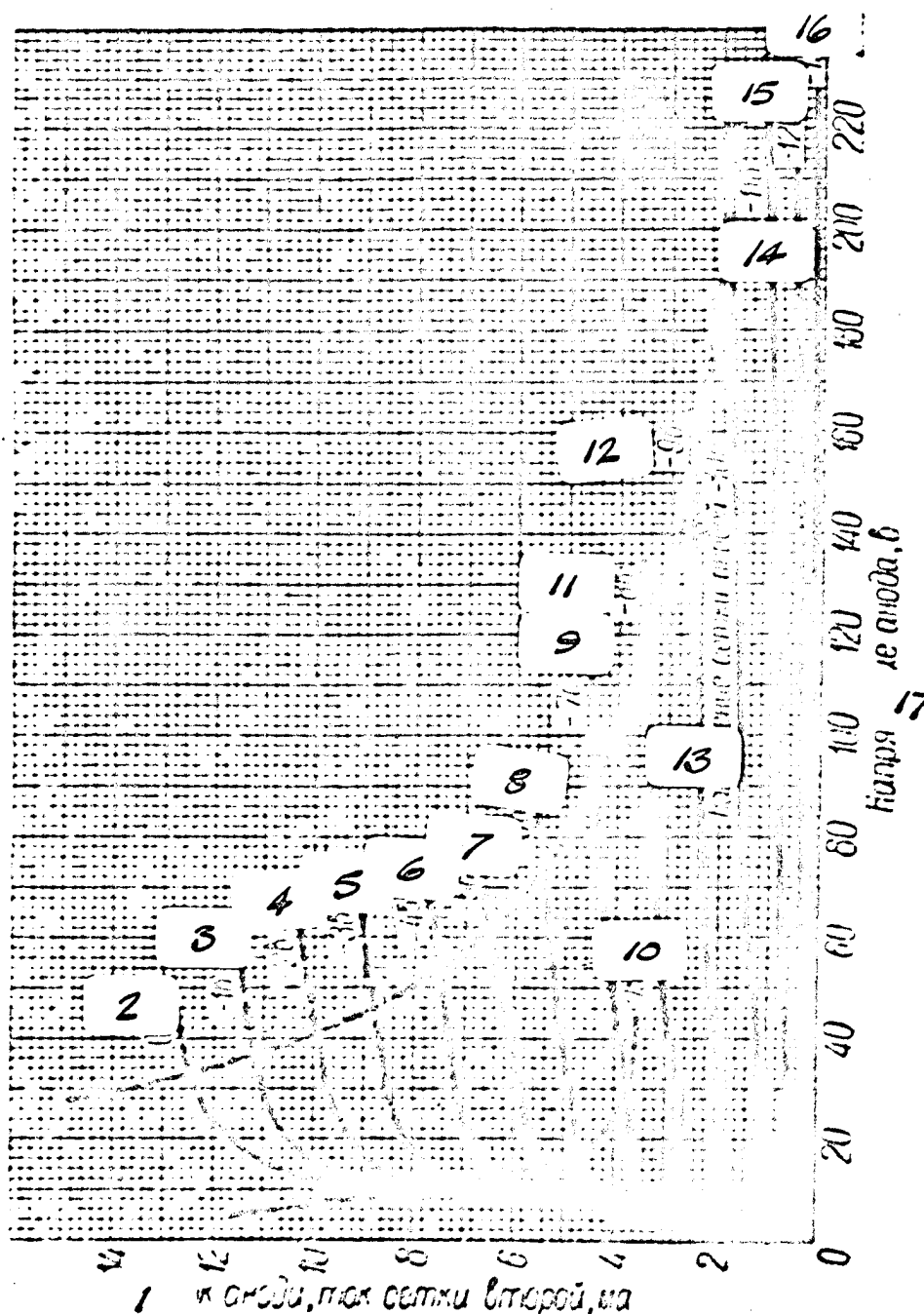
BEAM-POWER TETRODE

2P2P

Average Characteristics

— Plate
 ----- Grid-plate (for screen grid)
 - - - - - Maximum plate dissipation

Filament voltage, 1.2 v; screen voltage, 90 v.



- 1) Plate current, screen current, ma; 2) 0 v; 3) -1 v; 4) -2 v; 5) -3 v;
 6) -4 v; 7) -5 v; 8) -6 v; 9) -7 v; 10) 0 v; 11) -8 v; 12) -9 v;
 13) first-grid voltage, -10 v; 14) -11 v; 15) -12 v; 16) -13 v; 17)
 plate voltage, v.

(Above material published April 1959, PKB, G-4)

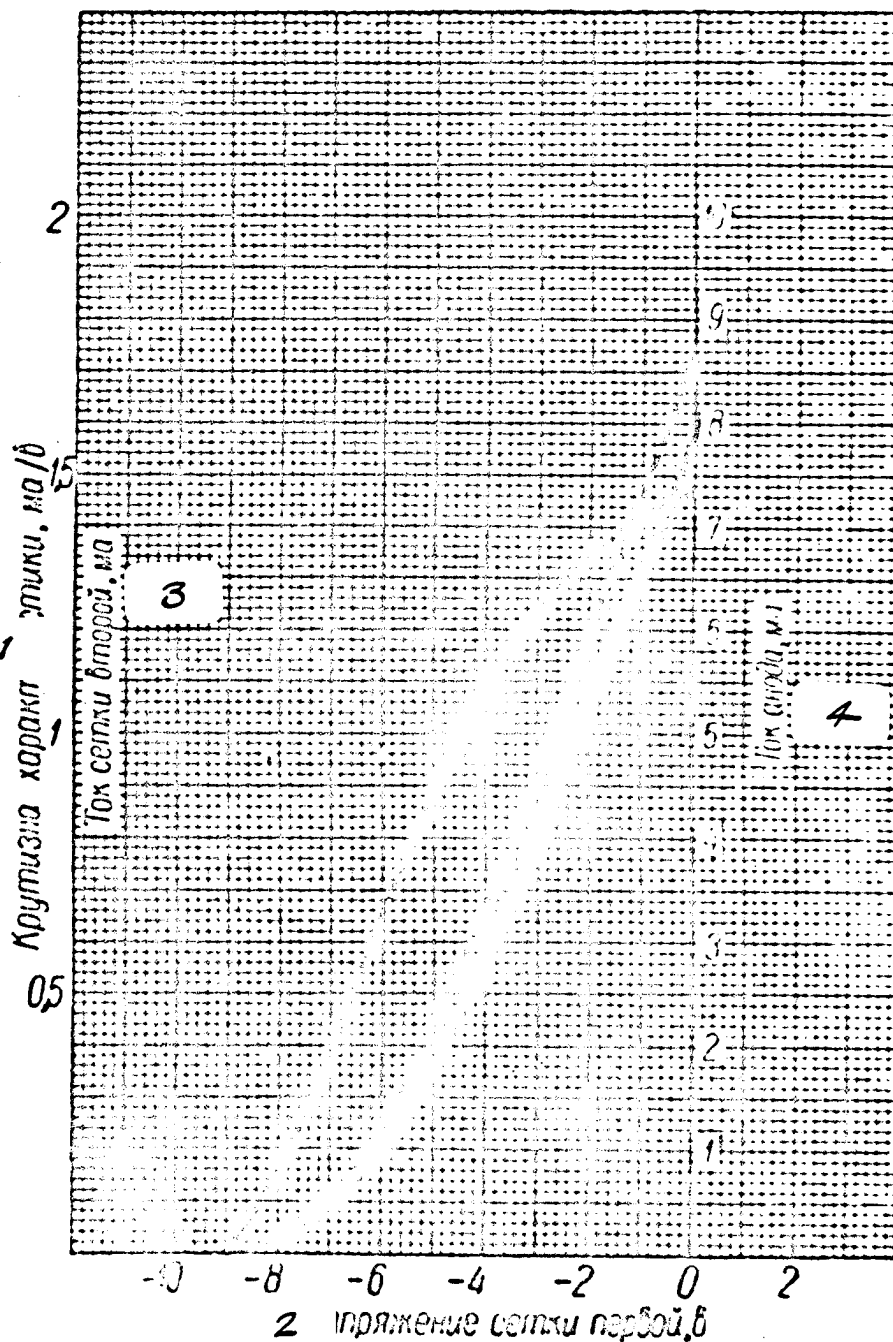
BEAM-POWER TETRODE

2P2P

Average Characteristics

— Plate-grid
 - - - - - Grid (for screen grid)
 ······ Transconductance

Filament voltage, 1.2 v; plate voltage, 60 v; screen voltage, 60 v.



1) Transconductance, ma/v; 2) first-grid voltage, v; 3) screen current, ma; 4) plate current, ma.

(Above material published April 1959, PKB, G-5)

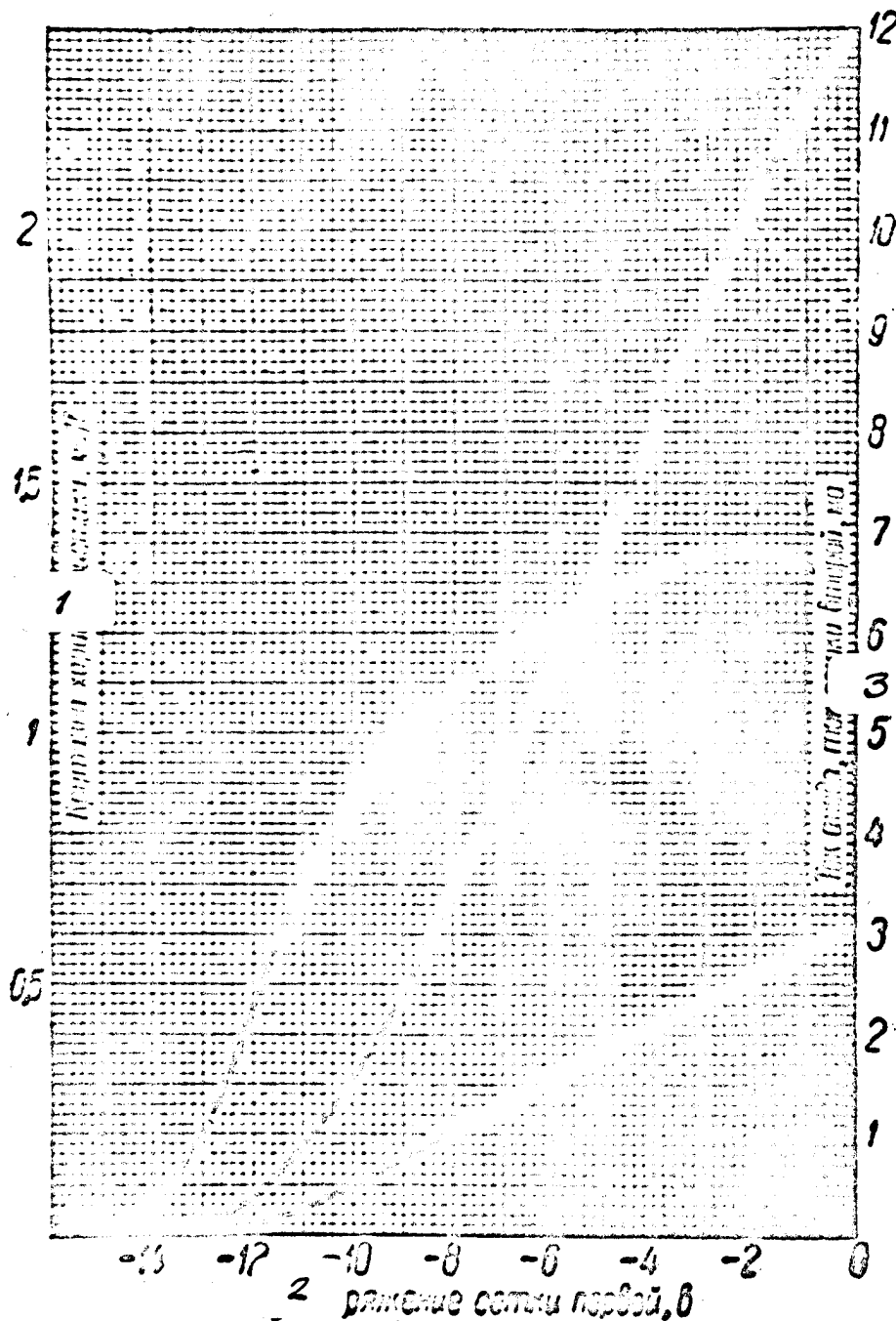
BEAM-POWER TETRODE

2P2P

Average Characteristics

- - - - - Plate-grid
 ——— Grid (for screen grid)
 - - - - - Transconductance

Filament voltage, 1.2 v; plate voltage, 90 v; screen voltage, 90 v.



1) Transconductance, ma/v; 2) first-grid voltage, v; 3) plate current, screen current, ma.

(Above material published April 1959, PKB, G-6)

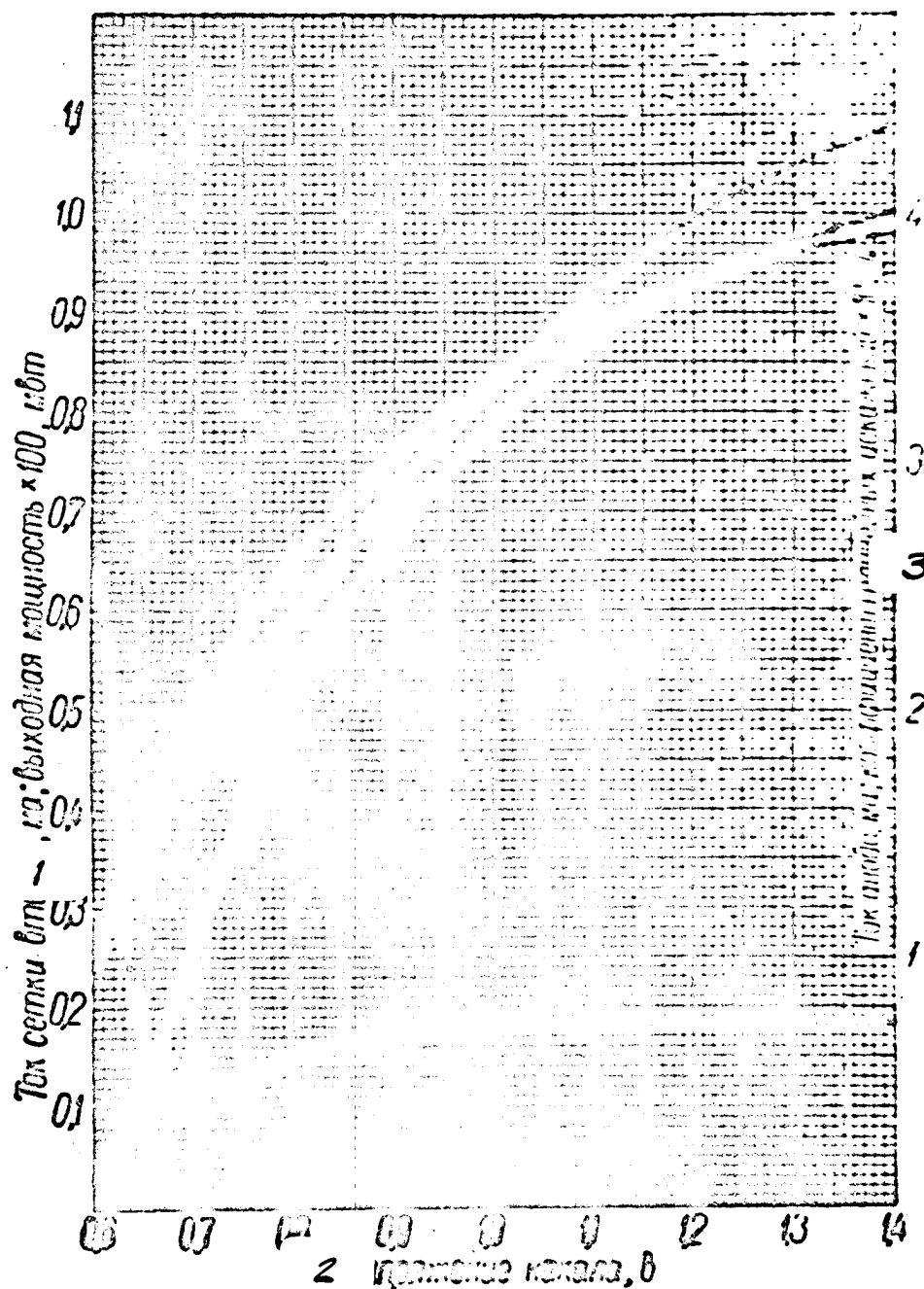
BEAM-POWER TETRODE

2P2P

Average Dynamic Characteristics

(As a function of filament voltage)

————— Output power; ----- plate current; - - - - - screen current;
 - - - - - nonlinear distortion; plate voltage, 60 v; screen voltage,
 60 v; first-grid voltage, -3.5 v; alternating first-grid voltage,
 2.5 v (eff); plate load resistance, 15 kohm.



1) Screen current, ma; output power x 100, mw; 2) filament voltage, v; 3) plate current, ma; nonlinear distortion x 10%.

(Above material published April 1959, PKB, G-7)

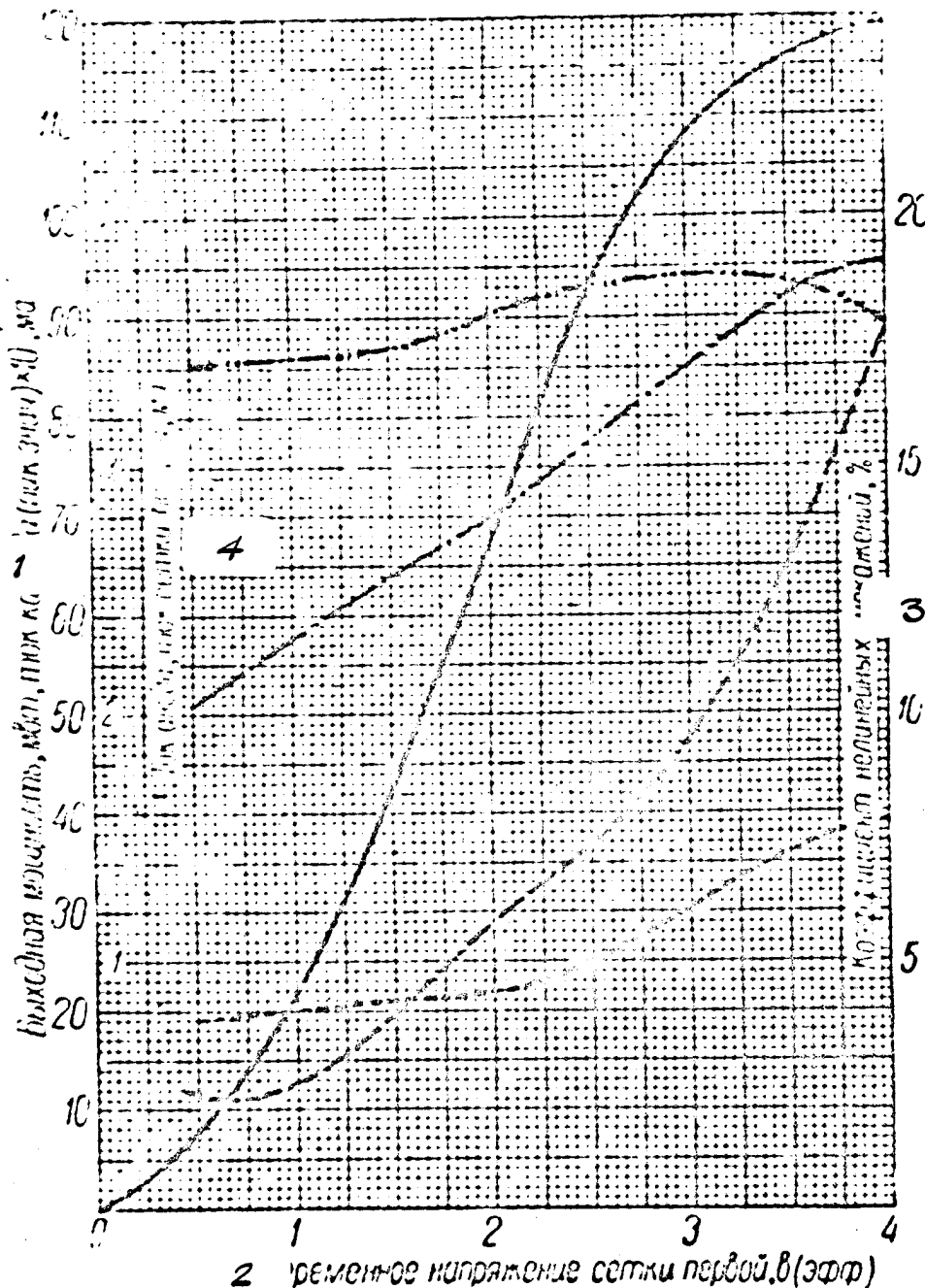
BEAM-POWER TETRODE

2P2P

Average Dynamic Characteristics

(As a function of effective first-grid voltage)

----- Plate current; screen current; ----- cathode current (peak value); ——— output power; ----- nonlinear distortion; filament voltage, 1.2 v; plate voltage, 60 v; screen voltage, 60 v; first-grid voltage, -3.5 v; load resistance, 15 kohm.



1) Output power, mw, cathode current (peak value) $\times 10^{-1}$, ma; 2) alternating first-grid voltage, v (eff); 3) nonlinear distortion, %; 4) plate current, screen current, ma.

(Above material published April 1959, PKB, G-8)

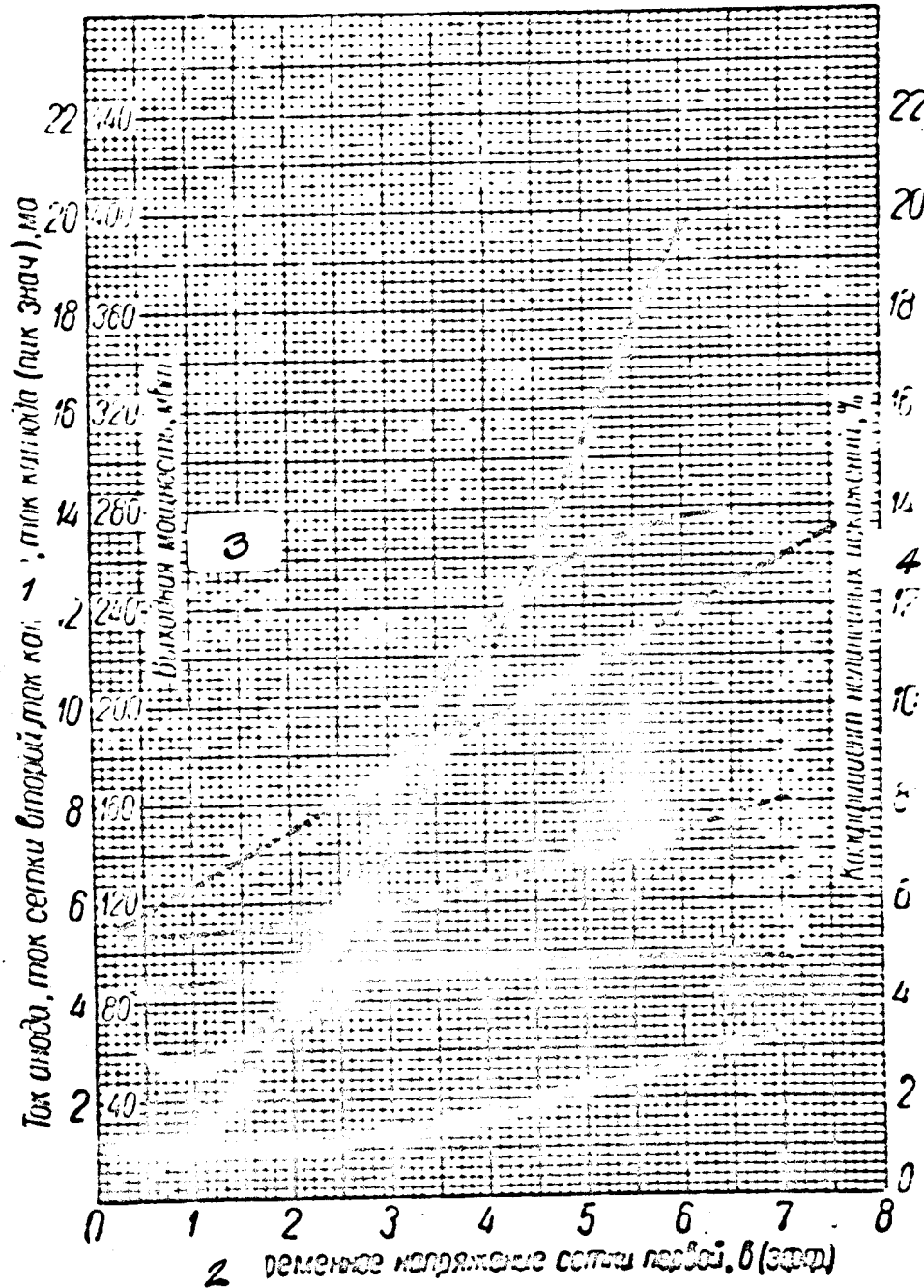
BEAM-POWER TETRODE

2P2P

Average Dynamic Characteristics

(As a function of effective first-grid voltage)

----- Plate current; — screen current; - - - - - cathode current (peak value); cathode current; - - - - - nonlinear distortion; ----- output current; filament voltage, 1.2 v; plate voltage, 90 v; screen voltage, 90 v; first-grid voltage, -7 v; load resistance, 15 kohm.



- 1) Plate current, screen current, cathode current, cathode current (peak value), ma; 2) alternating first-grid voltage, v (eff); 3) output power, mw; 4) nonlinear distortion, %.

(Above material published April 1959, PKB, G-9)

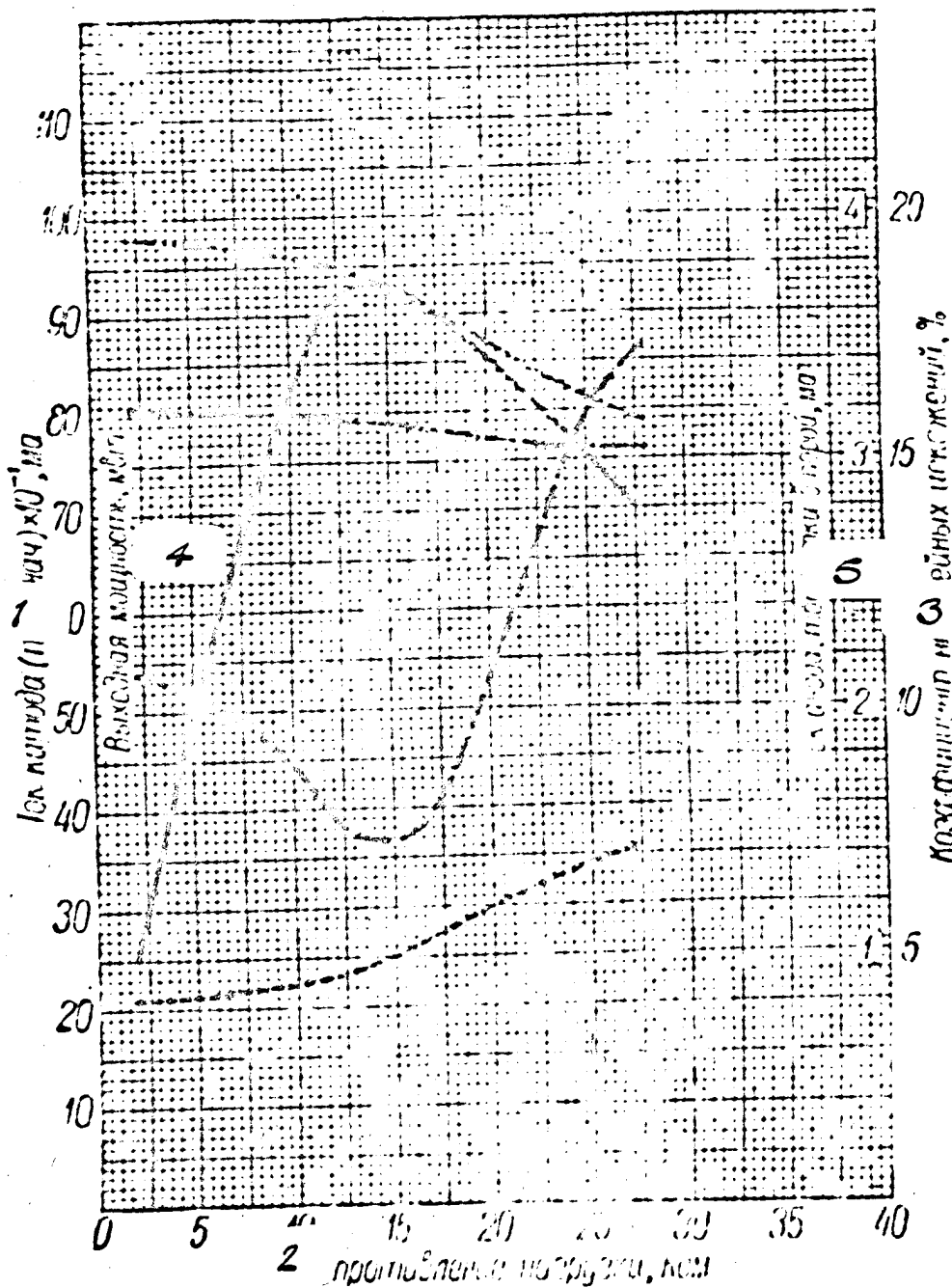
BEAM-POWER TETRODE

2P2P

Average Dynamic Characteristics

(As a function of load resistance)

..... Plate current; screen current; cathode current (peak value); ——— output power; ----- nonlinear distortion; filament voltage, 1.2 v; plate voltage, 60 v; screen voltage, 60 v; first-grid voltage, -3.5 v; alternating first-grid voltage, 2.5 v (eff).



- 1) Cathode current (peak value) $\times 10^{-1}$, ma; 2) load resistance, kohm;
 3) nonlinear distortion, %; 4) output power, mw; 5) plate current, screen current, ma.

(Above material published April 1959, PKB, G-10)

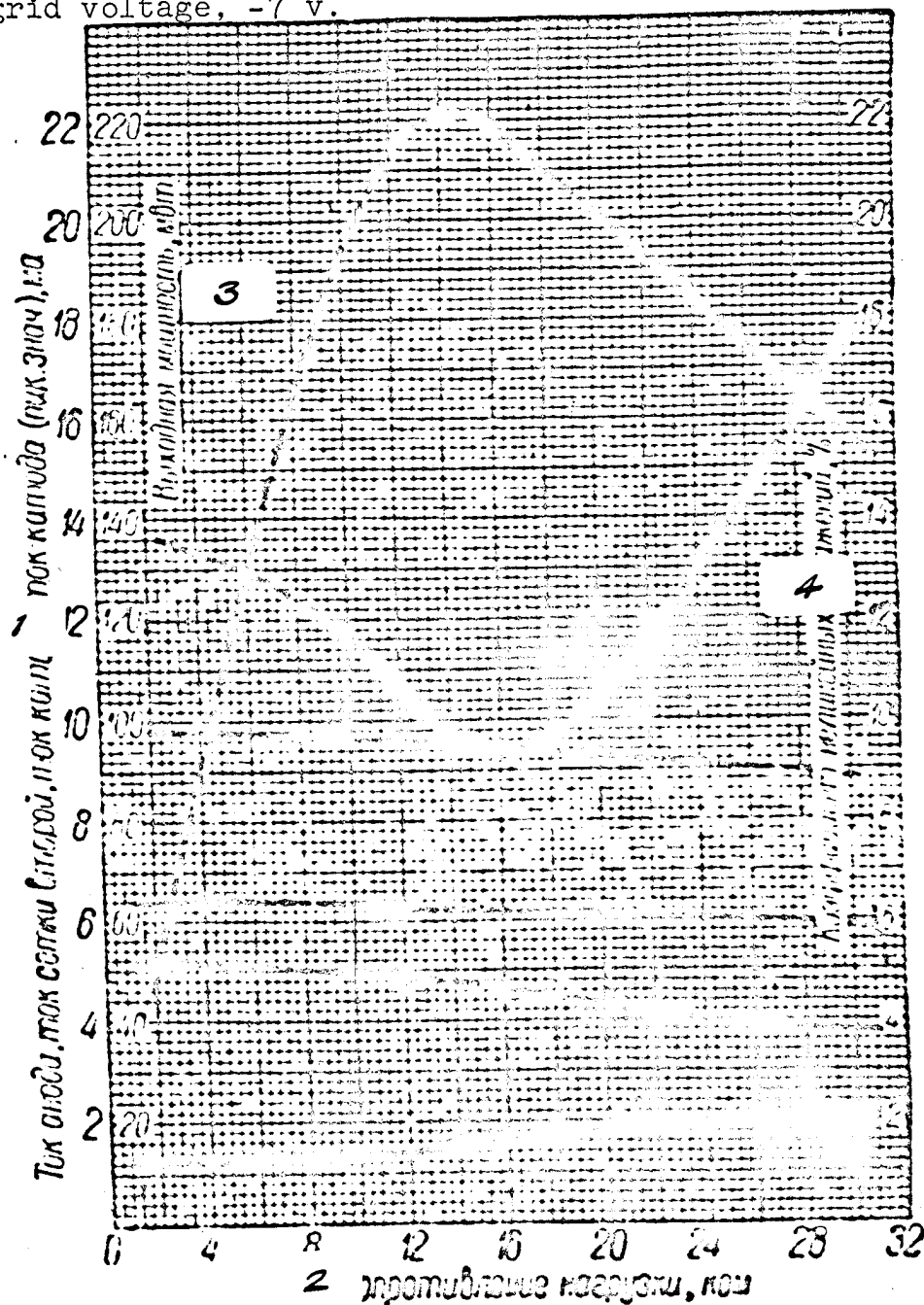
BEAM-POWER TETRODE

2P2P

Average Dynamic Characteristics

(As a function of load resistance)

..... Cathode current (peak value); cathode current; nonlinear distortion; plate current; screen current; output power; filament voltage, 1.2 v; plate voltage, 90 v; screen voltage, 90 v; alternating first-grid voltage, 3.7 v (eff); first-grid voltage, -7 v.



- 1) Plate current, screen current, cathode current, cathode current (peak value), ma; 2) load resistance, kohm; 3) output power, mw; 4) nonlinear distortion, %.

(Above material published April 1958, PKB, G-11)

BEAM-POWER RADIO-FREQUENCY TETRODE

2P9M

Basic function radio-frequency power amplifier and oscillator.Construction glass.General Data

Cathode — oxide-coated filament-type

Maximum height

109 mm

Maximum diameter

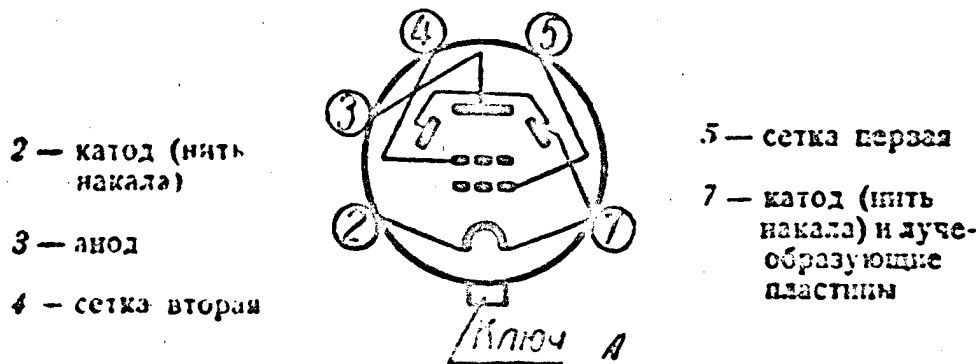
36 mm

Weight

52 grams

Base — octal, Tsl-1-5A

Dimension Drawing — 10S

Connection Diagram for Electrodes and Pins

2) Cathode (filament); 3) plate; 4) screen; 5) first grid; 7) cathode (filament) and beam-shaping plates. A) Key.

Electrical Data

Filament voltage (=)

2 v

Filament current

 1.0 ± 0.1

Plate voltage (=)

250 v

Screen voltage (=)

150 v

First-grid voltage

-6 v

Plate current

 35 ± 10 ma

Screen current

1.5 ma

Transconductance

2.5 ma/v

Output power*

no less than 6 watts

Output power for filament voltage of 1.8 v*

no less than 4.5 watts

First-grid back current

no more than 3 μ a

Cathode emission current**

no less than 100 ma

*For alternating first-grid voltage of 50 v (eff), first-grid resistance of 10 kohm, shunt capacitance of no less than 12 μ f, and plate load resistance of 2500 ohms (tank-circuit capacitance — 8 μ f).

**With 50 volts on plate, screen, and first grid.

← Addition introduced.

(Above material published April 1959, PKB, Sheet 1)

BEAM-POWER RADIO-FREQUENCY TETRODE

2P9M

First-grid insulation resistance	no less than 20 megohm
Service life	500 hours
Service-life criteria:	
output power*	no less than 4.8 watts
output power for filament voltage of 1.8 v*	no less than 3 watts ←

*For alternating first-grid voltage of 50 v (eff), first-grid resistance of 10 kohm, shunt capacitance of no less than 12 μ f and plate-load resistance of 2500 ohms (tank-circuit capacitance - 8 μ f).

Interelectrode Capacitances

Input	8.5 μ f
Output	8.5 μ f
Transfer	no more than 1.0 μ f

Maximum Permissible Operating Data

Maximum filament voltage (=)	2.2 v
Minimum filament voltage (=)	1.8 v
Maximum plate voltage (=)	300 v
Maximum screen voltage (=)	150 v
Maximum plate dissipation	8 watts

← Addition introduced.

(Above material published April 1959, PKB, Sheet 1)

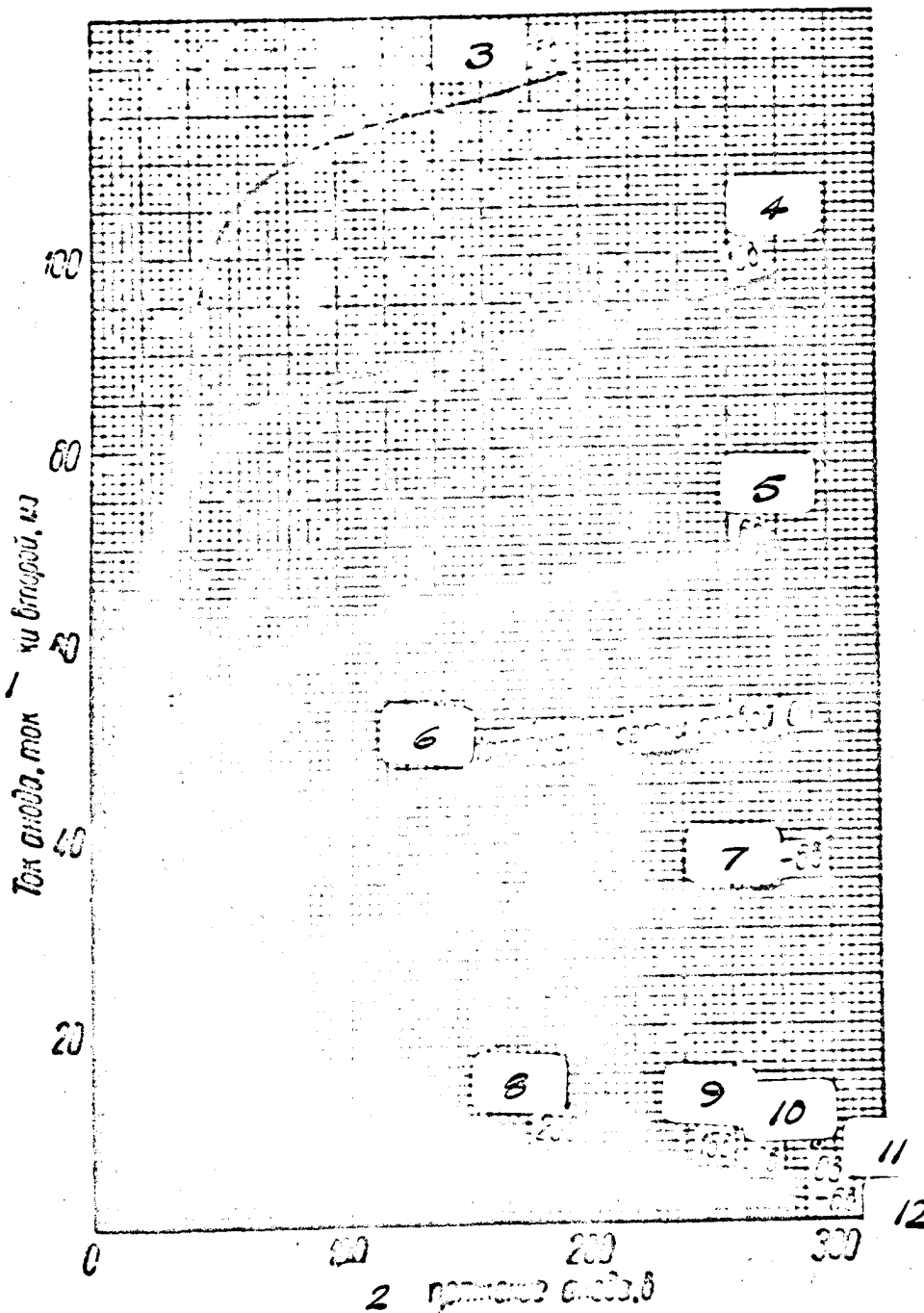
BEAM-POWER RADIO-FREQUENCY TETRODE

2P9M

Average Characteristics

———— Plate
 ----- Grid-plate (for second grid)

Filament voltage, 2 v; screen voltage, 150 v.



- 1) Plate current, screen current, ma; 2) plate voltage, v; 3) 25 v;
 4) 15 v; 5) 6 v; 6) first-grid voltage, 0 v; 7) -6 v; 8) 25 v;
 9) 15 v; 10) 6 v; 11) 0 v; 12) -6 v.

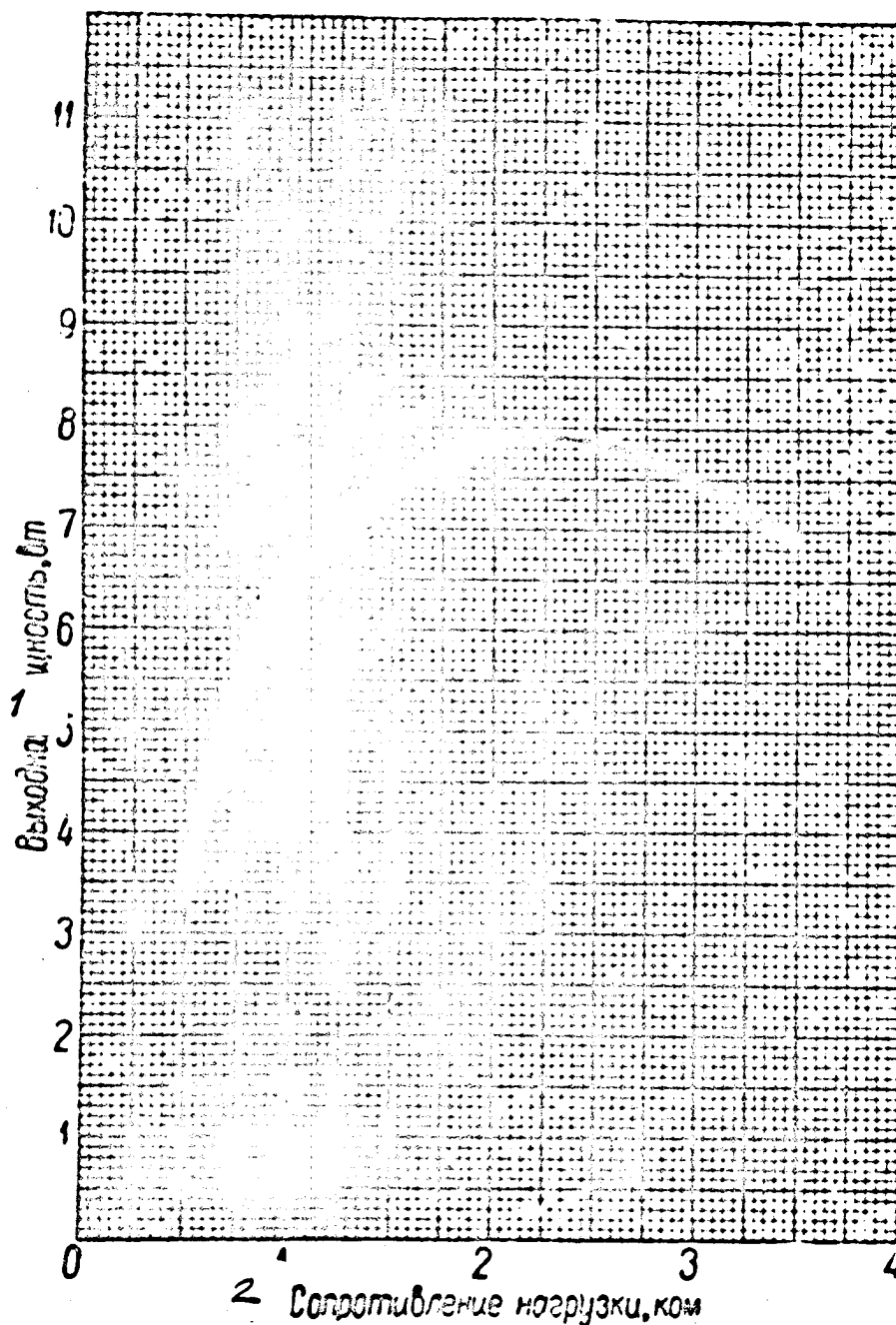
(Above material published April 1959, PKB, G-1)

BEAM-POWER RADIO-FREQUENCY TETRODE

2P9M

Average Dynamic Characteristics for Output Power as a Function of Load Resistance

Filament voltage, 2 v; plate voltage, 250 v; screen voltage, 150 v; first-grid voltage, 0 v; first-grid alternating voltage, 50 v (eff); first-grid resistance, 10 kohm; capacitance shunting first-grid resistance, 12 μ f.



1) Output power, watts; 2) load resistance, kohm.

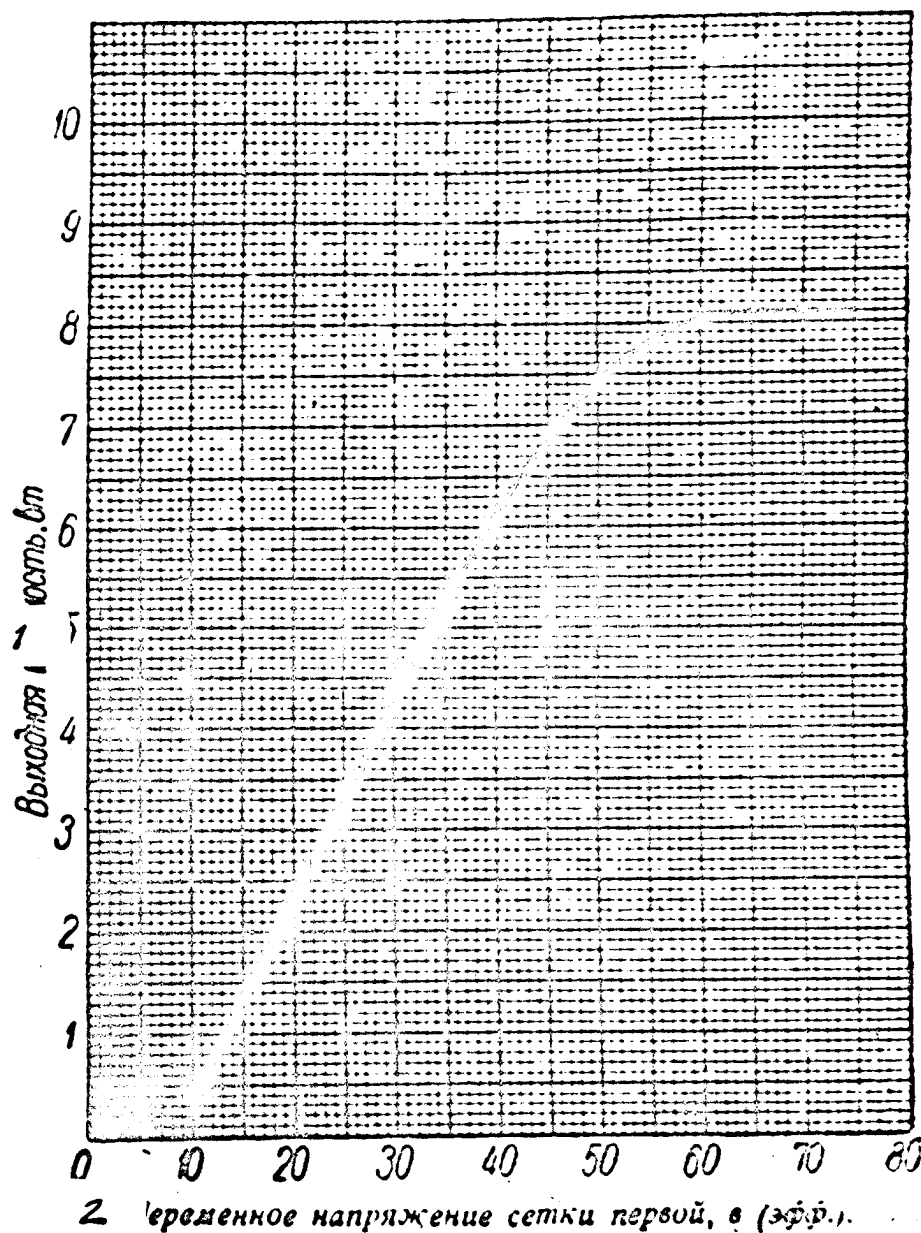
(Above material published April 1959, PKB, G-2)

BEAM-POWER RADIO-FREQUENCY TETRODE

2P9M

Average Dynamic Characteristics for Output Power as a Function of Effective First-Grid Voltage

Filament voltage, 2 v; plate voltage, 250 v; screen voltage, 150 v; first-grid voltage, 0 v; load resistance, 2.5 kohm; first-grid resistance, 10 kohm; capacitance shunting first-grid resistance, 12 μ f.



1) Output power, watts; 2) alternating first-grid voltage, v (eff).

(Above material published April 1959- PKB, G-3)

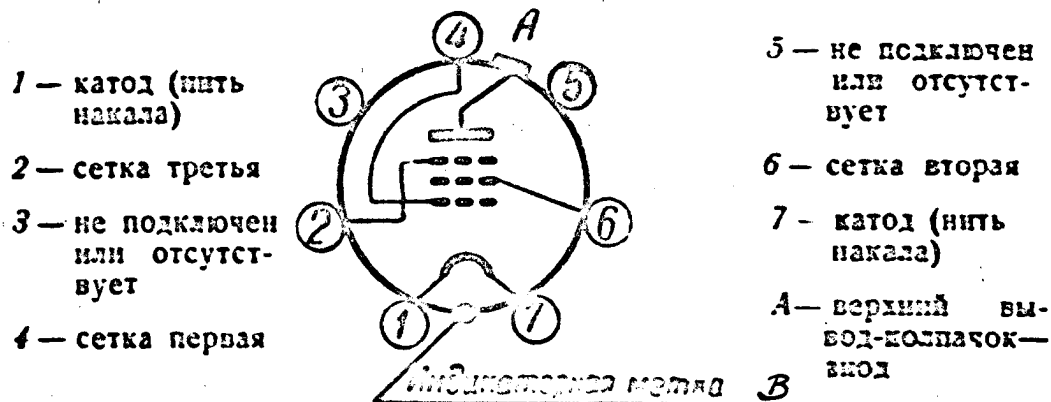
LOW-POWER TRANSMITTING PENTODE

2P19B

Basic function power amplifier and RF oscillator.Construction glass subminiature.General Data

Cathode — oxide-coated filament-type	
Maximum height (without leads)	45 mm
Maximum diameter	10.2 mm
Number of leads	7 or 5
Lead length	no less than 35 mm
Length of plate lead	no less than 20 mm
Lead diameter	0.4 mm
Maximum weight	5 grams
Dimension drawing — 10B	

Connection Diagram for Electrodes with Leads



1) Cathode (filament); 2) suppressor; 3) not connected, or lacking;
 4) first-grid; 5) not connected or lacking; 6) screen; 7) cathode (filament); A) top lead-cap — plate; B) indicator dot.

Electrical Data

Filament voltage (=)	2.2 v
Filament current	no more than 70 ma
Plate voltage (=)	20 v
Screen voltage (=)	90 v
First-grid voltage {=}	-5 v
Suppressor voltage {=}	0 v
Plate current	7.6 ± 2.2 ma
Screen current	no more than 3.5 ma
Transconductance	no less than 1.7 ma/v
Transconductance for filament voltage of 2 v	no less than 1.45 ma/v

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

LOW-POWER TRANSMITTING PENTODE

2P19B

Negative first-grid voltage*	no more than 25 v
First-grid back current	no more than 0.5 μ a
Vibration-noise voltage**	no more than 500 mv (eff)
Service life	1000 hours
Service-life criterion: transconductance	no less than 1.45 ma/v

*For plate current of 100 μ a.
 **For 10 kohm resistance at vibration frequency of 50 cps and 6 G acceleration.

Interelectrode Capacitances*

Input	no more than 4.5 μ mf
Output	no more than 7 μ mf
Transfer	no more than 0.03 μ mf
Plate-cathode	no more than 0.05 μ mf

*Measured in shield.

Maximum Permissible Operating Data

Maximum filament voltage (with a drop in service life to 200 hours) (=)	2.5 v
Minimum filament voltage (with a drop in service life to 300 hours) (=)	1.8 v
Maximum plate voltage (=)	200 v
Maximum screen voltage (=)	130 v
Maximum plate dissipation	1 watt
Maximum screen dissipation	0.35 watt
Maximum cathode current	15 ma

← Change and addition introduced. [← does not appear in body of text —
 Trans. Note]
 (Above material published April 1959, PKB, Sheet 1)

LOW-POWER TRANSMITTING PENTODE

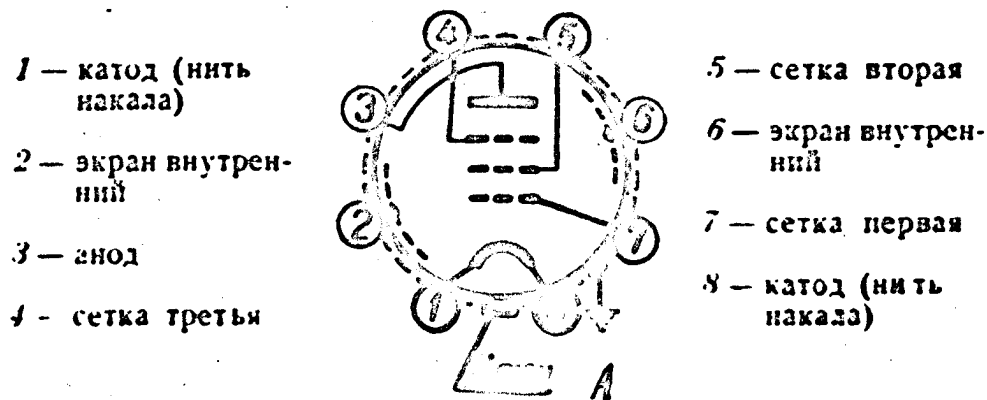
2P29L

Basic function power amplifier and radio frequency oscillator
(to 120 Mc).

Construction glass, using button stem with internal metal shield.

General Data

Cathode — oxide-coated filament-type	
Maximum height (without knob)	65 mm
Maximum diameter	32 mm
Maximum weight (without knob)	45 grams
Base — shield with lock-in key, Ts4-2	
Dimension drawing — 3L	

Connection Diagram for Electrodes and Pins

- 1) Cathode (filament); 2) internal shield; 3) plate; 4) suppressor;
5) screen; 6) internal shield; 7) first grid; 8) cathode (filament);
A) Key.

Electrical Data

Filament voltage (=)	2.2 v
Filament current	122.5 ± 17.5 ma
Plate voltage (=)	160 v
Screen voltage (=)	120 v
Suppressor voltage (=)	0 v
Plate current for first-grid voltage of -17.5 v	no more than 1 ma
Screen current	no more than .2 ma
Transconductance*	2.05 ± 0.25 ma/v ←
Negative first-grid voltage*	5.5 ± 1.7 v
Negative suppressor voltage for alternating voltage across plate load of 5 v (eff)**	85 ⁺¹⁵ ₋₁₀ v ←

*For plate current of 10 ma and steady-state first-grid voltage.

**For alternating first-grid voltage of 20 v (eff), resistance in first-grid circuit of 20 kohm, and plate load resistance of 6 kohm.

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

LOW-POWER TRANSMITTING PENTODE

2P29L

Output power*	no less than 1.2 watts
Output power for filament voltage of 2 v*	no less than 1 watt
First-grid back current**	no more than 0.6 μ a
Cathode emission current.	no less than 35 ma
Service life	1000 hours
Service-life criteria:	
Output power*	no less than 1 watt
Output power for filament voltage of 2 v*	no less than 0.9 watt

*For suppressor voltage of + 15 v, alternating first-grid voltage of 20 v (eff), resistance in first-grid circuit of 20 kohm, and plate load resistance of 6 kohm.

**For plate current of 10 ma, steady-state first-grid voltage.

Interelectrode Capacitances

Input	4.3 $\pm$ 0.5 μ mf
Output	5.3 $\pm$ 0.6 μ mf
Transfer	no more than 0.055 μ mf
Plate-cathode	no more than 0.03 μ mf

Maximum Permissible Operating Data

Maximum filament voltage (=)	2.4 v
Minimum filament voltage (=)	2.0 v
Maximum plate voltage (=)	200 v
Maximum screen voltage (=)	150 v
Maximum plate dissipation	2 watts
Maximum screen dissipation	0.7 watt
Maximum cathode current	20 ma

(Above material published April 1959, PKB, Sheet 1)

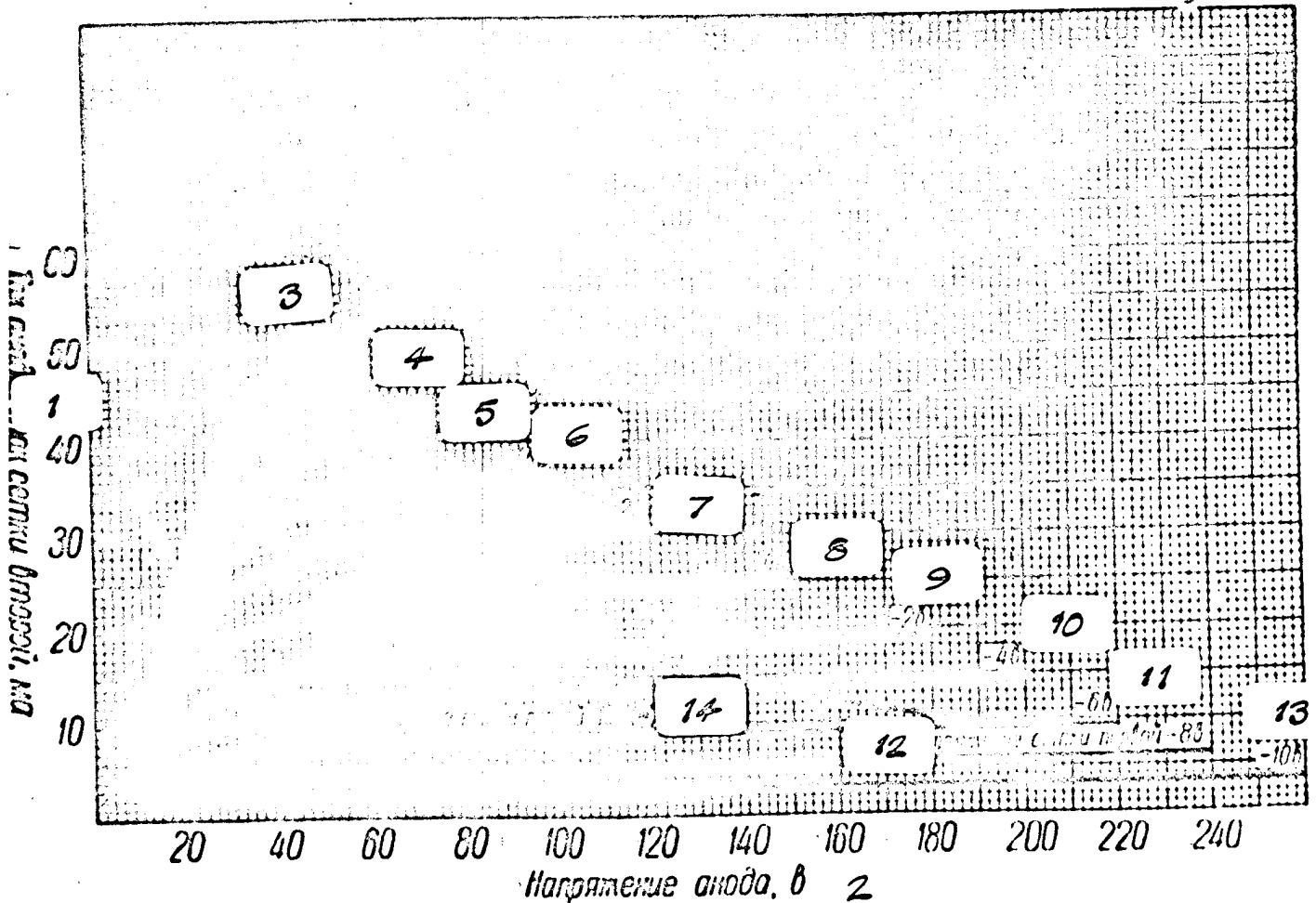
LOW-POWER TRANSMITTING PENTODE

2P29L

Average Characteristics

- Plate
 - - - - - Grid-plate (for screen grid)
 - - - - - Maximum permissible plate dissipation

Filament voltage, 2.2 v; screen voltage, 120 v; suppressor voltage, 15 v.



- 1) Plate current, screen current, ma; 2) plate voltage, v; 3) 10 v;
 4) 8 v; 5) 6 v; 6) 4 v; 7) 2 v; 8) 0 v; 9) -2 v; 10) -4 v; 11) -6 v;
 12) first-grid voltage, -8 v; 13) -10 v; 14) first-grid voltage,
 10 v (=).

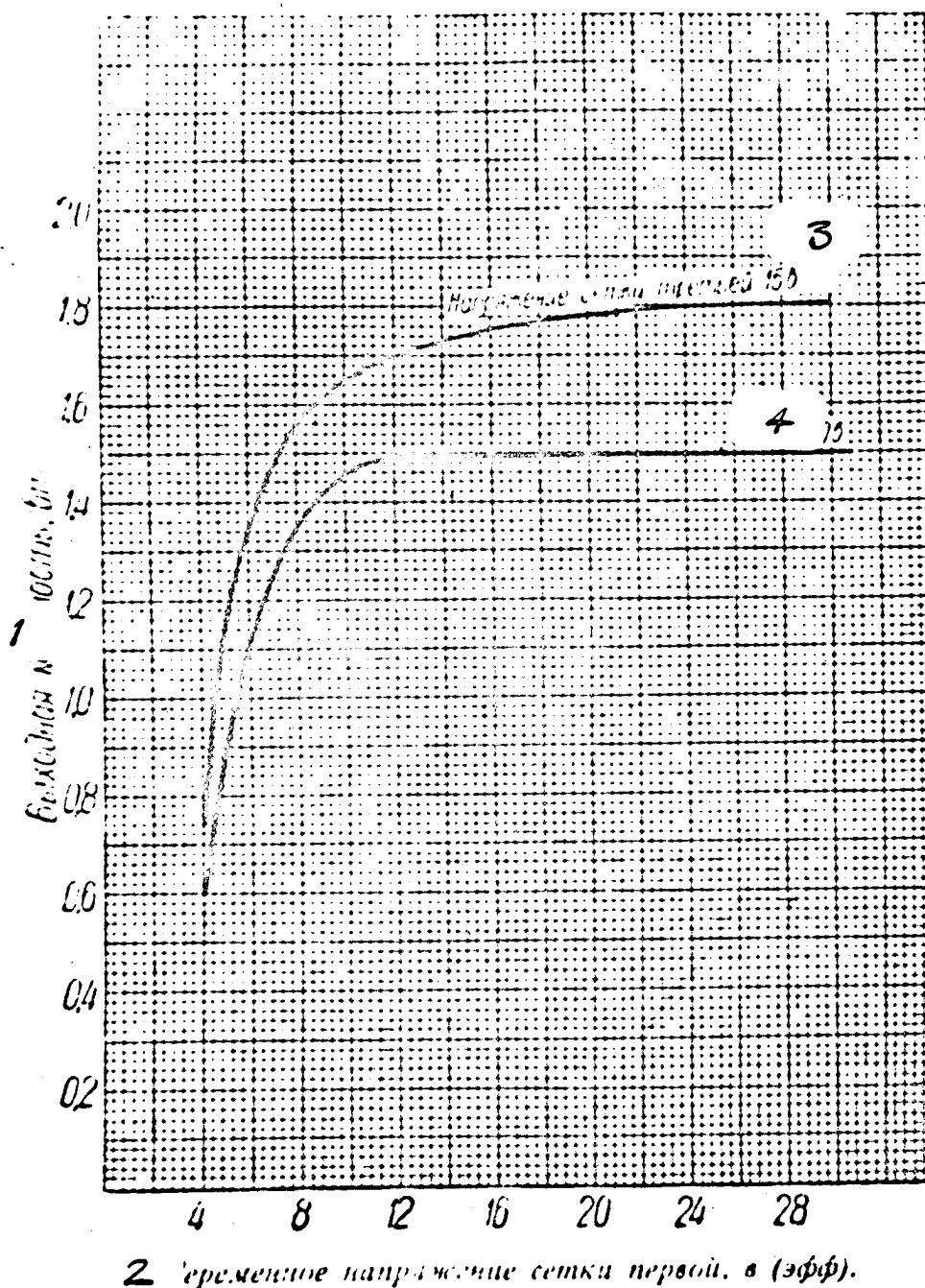
(Above material published April 1959, PKB, G-1)

LOW-POWER TRANSMITTING PENTODE

2P29L

Average Dynamic Characteristics for Output Power as a Function of Effective First-Grid Voltage

Filament voltage, 2.2 v; plate voltage, 160 v; screen voltage, 120 v; grid leakage resistance, 20 kohm; load resistance, 6 kohm.



- 1) Output power, watts; 2) alternating first-grid voltage, v (eff);
 3) suppressor voltage, 15 v; 4) 0 v.

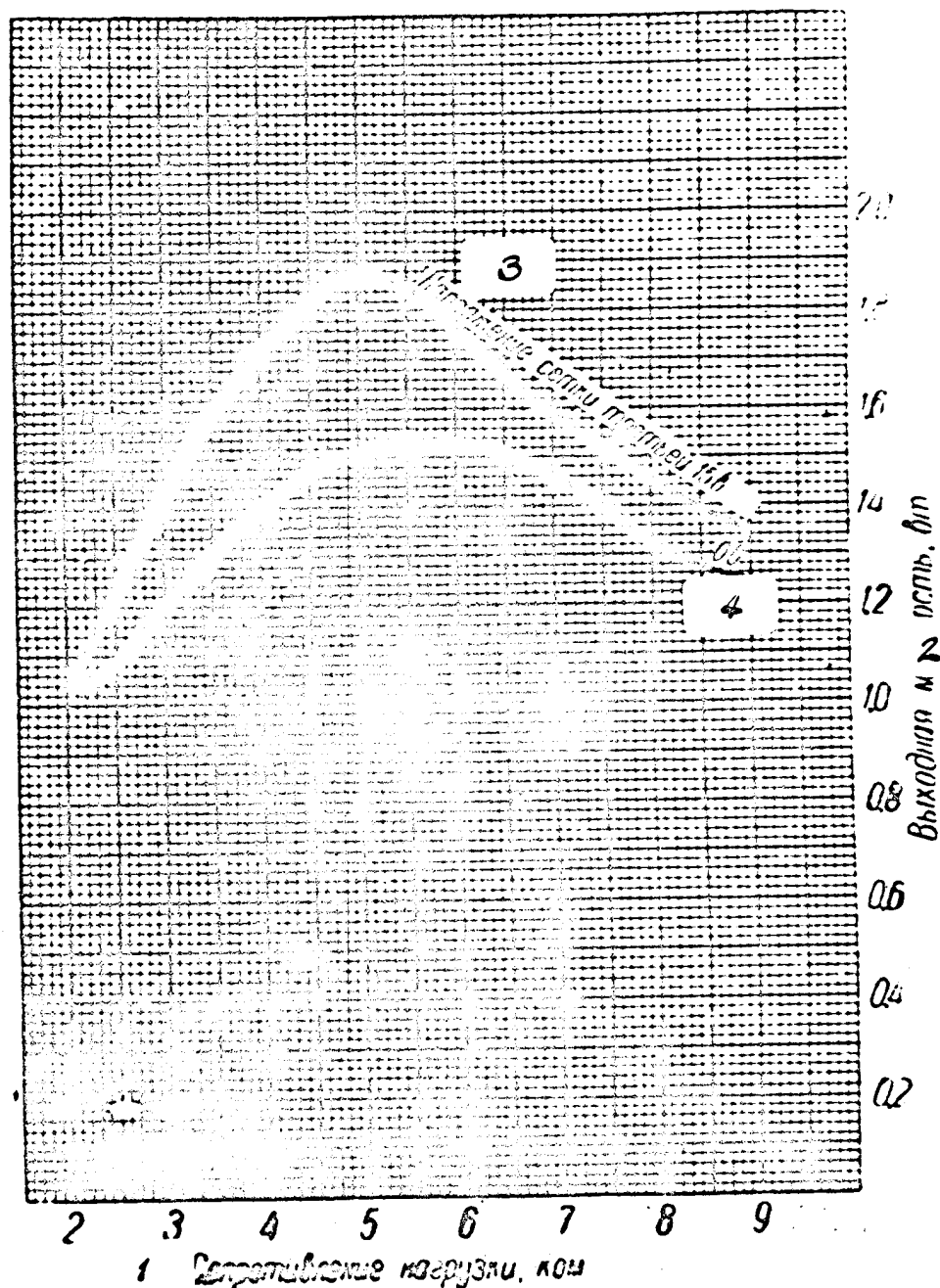
(Above material published April 1959, PKB, G-2)

LOW-POWER TRANSMITTING PENTODE

2P29L

Average Dynamic Characteristics for Output Power as a Function of Load Resistance

Filament voltage, 2.2 v; plate voltage, 160 v; screen voltage, 120 v; grid leakage resistance, 20 kohm; alternating first-grid voltage, 20 v (eff).



1) Load resistance, kohm; 2) output power, watts; 3) suppressor voltage, 15 v; 4) 0 v.

(Above material published April 1959, PKB, G-3)

LOW-POWER TRANSMITTING PENTODE

2P29P

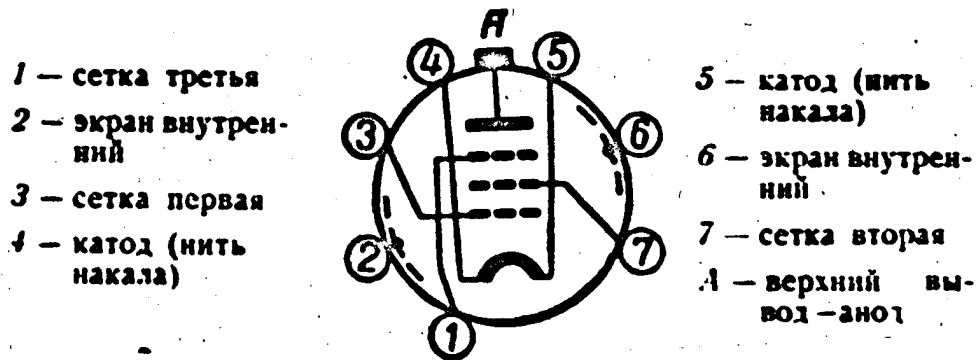
Basic function power amplifier and radio-frequency oscillator
(to 120 Mc).

Construction glass miniature with flexible leads for mounting
into equipment by means of soldering

General Data

Cathode — oxide-coated filament-type
Maximum height (without leads)
Maximum diameter
Weight
Number of leads
Dimension drawing — 11P

51 mm
19 mm
12 grams
8

Connection Diagram for Electrodes and Leads

1) Suppressor grid; 2) internal shield; 3) control grid; 4) cathode (filament); 5) cathode (filament); 6) internal shield; 7) screen grid; A) top lead — plate.

Electrical Data

Filament voltage (=)	2.2 v
Filament current	110 ± 15 ma
Plate voltage (=)	120 v
Screen voltage (=)	45 v
Control-grid voltage (=)	0 v
Suppressor-grid voltage (=)	0 v
Plate current	no less than 3 ma
Screen current	no more than 1 ma
Transconductance:	
for filament voltage of 2.2 v	no less than 1.7 ma/v
for filament voltage of 2.0 v	no less than 1.6 ma/v
for filament voltage of 1.8 v	no less than 1.4 ma/v
Negative control-grid voltage for plate current of 100 μa	no more than 4.8 v
Negative electron-current control-grid cut-off voltage	from 0 to 1 v

(Above material published April 1959, PKB, Sheet 1)

LOW-POWER TRANSMITTING PENTODE

2P29P

Control-grid back current*	no more than 0.5 μ a
Cathode emission current	no less than 35 ma
Service life	1000 hours
Service-life criterion: transconductance	no less than 1.45 ma/v

*For control grid voltage of -1 v.

Interelectrode Capacitances

Input	4.85 $\pm$ 0.65 μ f
Output	2 $\pm$ 0.5 μ f
Transfer	no more than 0.015 μ f
Plate-cathode	no more than 0.01 μ f

Maximum Permissible Operating Data

Maximum filament voltage (=)	2.4 v
Minimum filament voltage (=)	2.0 v
Maximum plate voltage (=)	200 v
Maximum screen voltage (=)	120 v
Maximum plate dissipation	1 watt
Maximum screen dissipation	0.3 watt
Maximum cathode current	5 ma

(Above material published April 1959, PKB, Sheet 1)

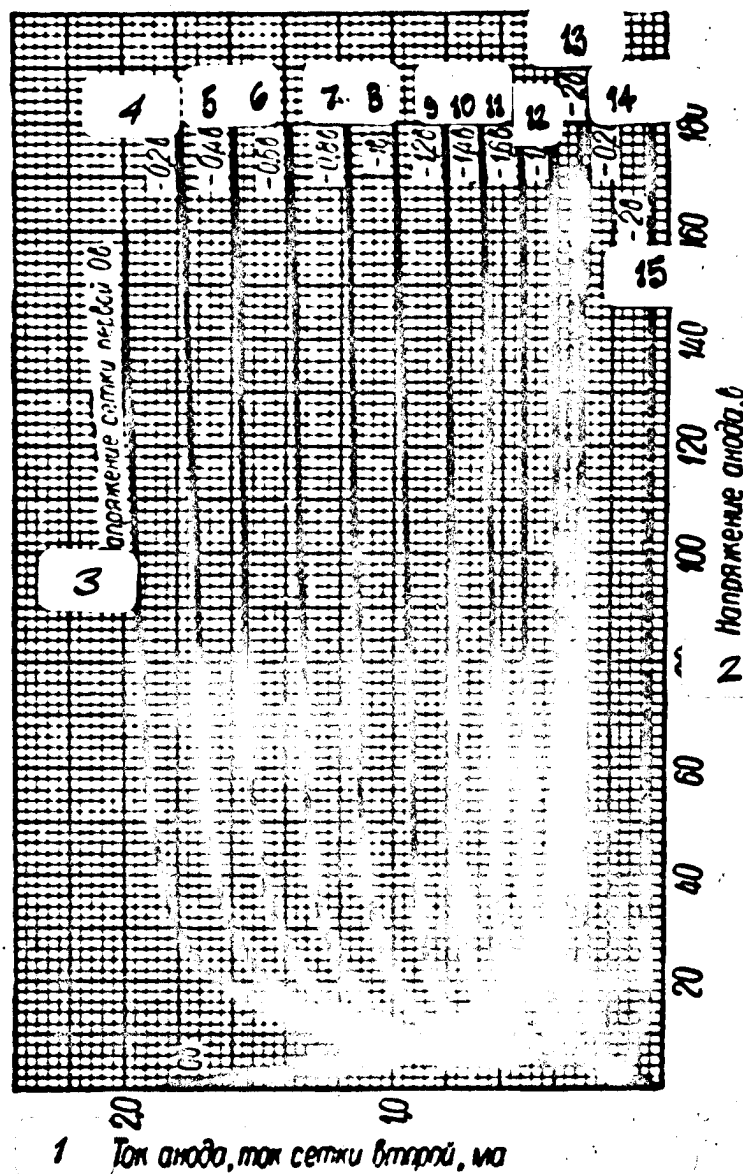
LOW-POWER TRANSMITTING PENTODE

2P29P

Average Characteristics

———— Plate
 ----- Grid-plate (for screen grid)

Filament voltage, 2.2 v; screen voltage, 45 v; suppressor voltage, 0 v.



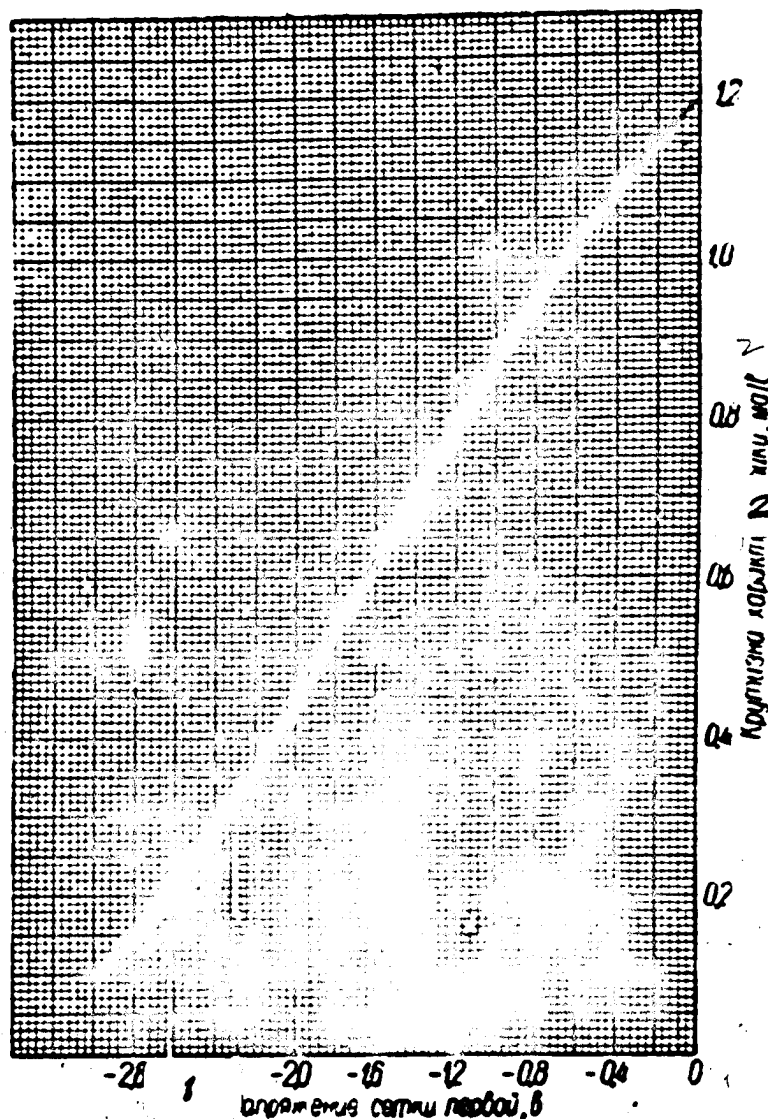
- 1) Plate current, screen current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -0.2 v; 5) -0.4 v; 6) -0.6 v; 7) -0.8 v; 8) -1 v; 9) -1.2 v; 10) -1.4 v; 11) -1.6 v; 12) -1.8 v; 13) -2 v; 14) -0.2 v; 15) -2 v.
 (Above material published April 1959, PKB, G-1)

LOW-POWER TRANSMITTING PENTODE

2P29P

Average Characteristics for Transconductance as Function of First-Grid Voltage

Filament voltage, 2.2 v; plate voltage, 120 v; screen voltage, 45 v; suppressor voltage, 0 v.



1) First-grid voltage, v; 2) transconductance, ma/v.

(Above material published April 1959, PKB, G-3)

LOW-POWER TRANSMITTING PENTODE

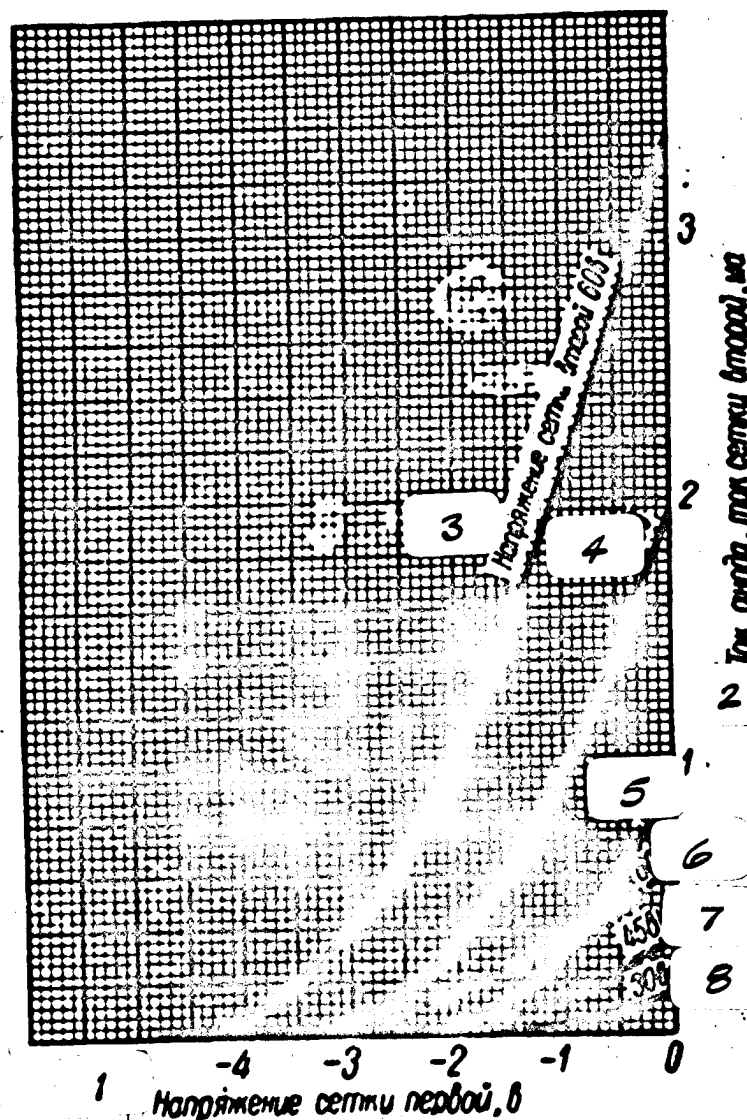
2P29P

Average Characteristics

——— Plate-grid

- - - - - Grid (for screen grid)

Filament voltage, 2.2 v; plate voltage, 120 v; suppressor voltage, 0 v.



- 1) First-grid voltage, v; 2) plate current, screen current, ma;
 3) screen voltage, 60 v; 4) 45 v; 5) 30 v; 6) 60 v; 7) 45 v;
 8) 30 v.

(Above material published April 1959, PKB, G-2)

TRANSMITTING TRIODE

2S14B

Basic Function voltage amplifier and radio-frequency and audio-frequency oscillator.

Construction glass subminiature.

General Data

Cathode — oxide-coated filament-type	
Maximum height (without leads)	45 mm
Maximum diameter	10.2 mm
Number of leads	4
Lead length	no less than 40 mm
Lead diameter	about 0.4 mm
Maximum weight	4.5 grams
Dimension drawing — 8B	

Connection Diagram for Electrodes and Leads

- 1) Plate; 2) cathode (filament); 3) cathode (filament); 4) grid;
A) indicator dot.

Electrical Data

Filament voltage (=)	2.2 v
Filament current	60 ± 6 ma
Plate voltage (=)	90 v
Grid voltage (=)	-3 v
Plate current	3.6 ± 0.9 ma
Transconductance	1.8 ± 0.45 ma/v
Transconductance for filament voltage of 2 v	no less than 1.1 ma/v
Gain	15 ± 3
Negative voltage*	no more than 8 v
Grid back current	no more than 0.2 μa
Vibration-noise voltage**	no more than 150 mv (eff)
Service life	2000 hours
Service-life criterion: transconductance	no less than 1.1 ma/v

*For plate current of 100 μa.

**For 2 kohm resistance with 50 cps vibration frequency and acceleration of 6 G.

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

TRANSMITTING TRIODE

2S14B

Interelectrode Capacitances

Grid-cathode	no more than 2.1 μf
Grid-plate	no more than 2 μf
Plate-cathode	no more than 2.8 μf

Maximum Permissible Operating Data

Maximum filament voltage (with drop in service life to 400 hours) (=)	2.5 v
Minimum filament voltage (with drop in service life to 600 hours) (=)	1.8 v
Maximum plate voltage (=)	250 v
Maximum plate dissipation	0.75 watt
Maximum cathode current	5 ma
Maximum frequency of oscillation	300 Mc

(Above material published April 1959, PKB, Sheet 1)

DUAL DIODE

2Kh1L

Basic function detector.Construction glass using button stem with internal metal shield.General Data

Cathode — oxide-coated heater type
 Maximum height (without knob)
 Maximum diameter
 Maximum weight
 Base — shield with lock in key, Ts4-2
 Dimension drawing — 3L

65 mm
 32 mm
 45 grams

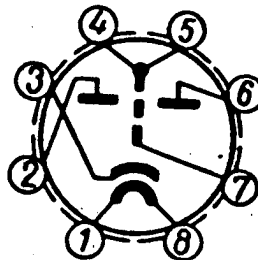
Connection Diagram for Electrodes and Pins

1 — подогреватель

2 — первый анод

3 — катод

4 — экран



5 — экран

6 — второй анод

7 — экран

8 — подогреватель

1) Heater; 2) first plate; 3) cathode; 4) shield; 5) shield; 6) second plate; 7) shield; 8) heater.

Electrical Data

Heater voltage (~ or =)	2.2 v
Heater current	130 ± 10 ma
Alternating voltage on plate of each diode	50 v (eff)
Plate current for each diode*	no less than 1 ma
Plate current for each diode with heater voltage of 2.0 v*	0.85 ma
Mutual conductance of each diode	no less than 0.4 ma/v
Plate-current cutoff voltage for each diode	no less than -1.5 v
Heater-cathode insulation resistance	2 megohms
Service life	500 hours
Service-life criterion:	
plate current for each diode	no less than 0.8 ma

*For plate voltage of 5 v (=).

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

DUAL DIODE

2KH1L

Interelectrode Capacitances

Cathode-plate of each diode	2.25 μf
Between the plates	no more than 0.0015 μf

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	2.4 v
Minimum heater voltage ($\sim$ or $=$)	2.0 v
Maximum alternating plate voltage for each diode	100 v (eff)
Maximum voltage between cathode and heater ($=$)	30 v

(Above material published April 1959, PKB, Sheet 1)

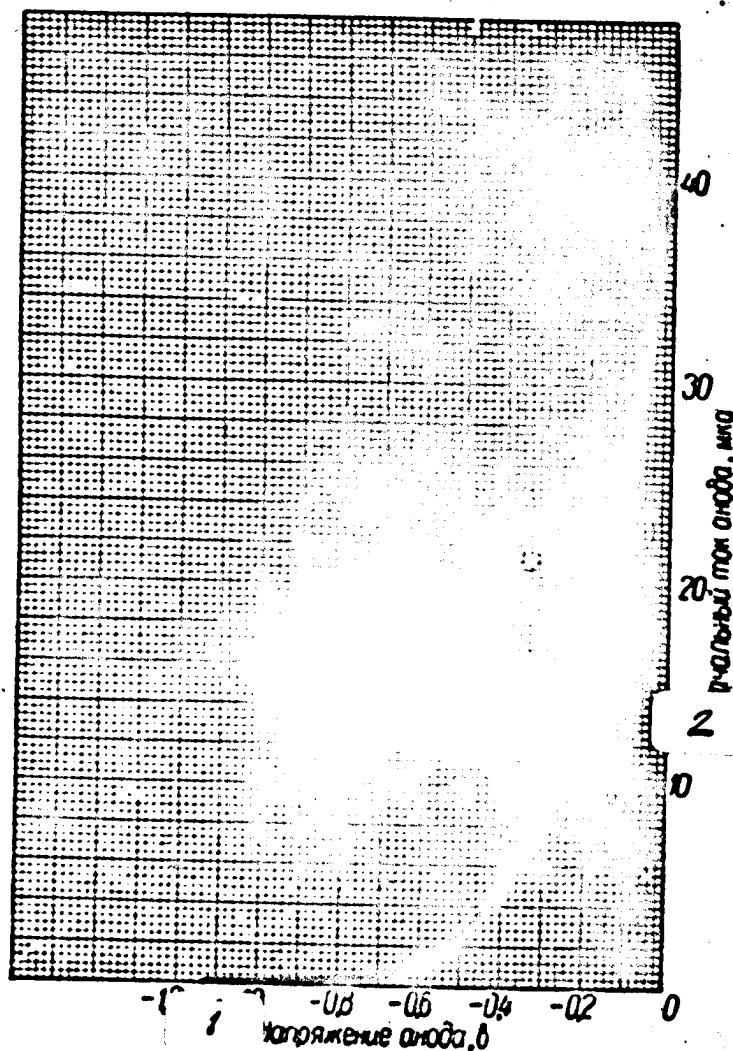
DUAL DIODE

2Kh1L

Average Initial Plate Characteristic

(for a single diode)

Heater voltage, 2.2 v.



1) Plate voltage, v; 2) initial plate current, μ a.

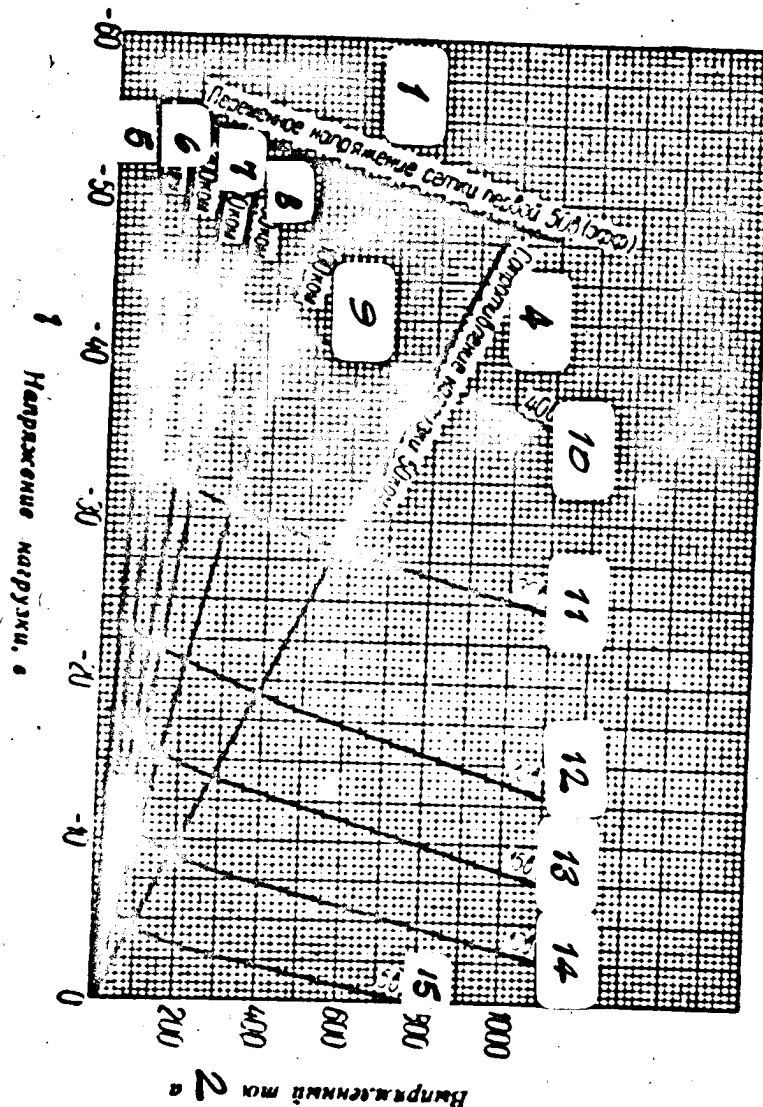
(Above material published April 1959, PKB, G-1)

DUAL DIODE

2Kh1L

Average Dynamic Characteristics for Rectified Current as a Function of Load Voltage

Heater voltage, 2.2 v.



1) Load voltage, v; 2) rectified current, μA ; 3) first-grid alternating voltage, 50 v (eff); 4) load resistance, 50 kohm; 5) 500 kohm; 6) 300 kohm; 7) 200 kohm; 8) 150 kohm; 9) 100 kohm; 10) 40 v; 11) 30 v; 12) 20 v; 13) 15 v; 14) 10 v; 15) 5 v.

(Above material published April 1959, PKB, G-3)

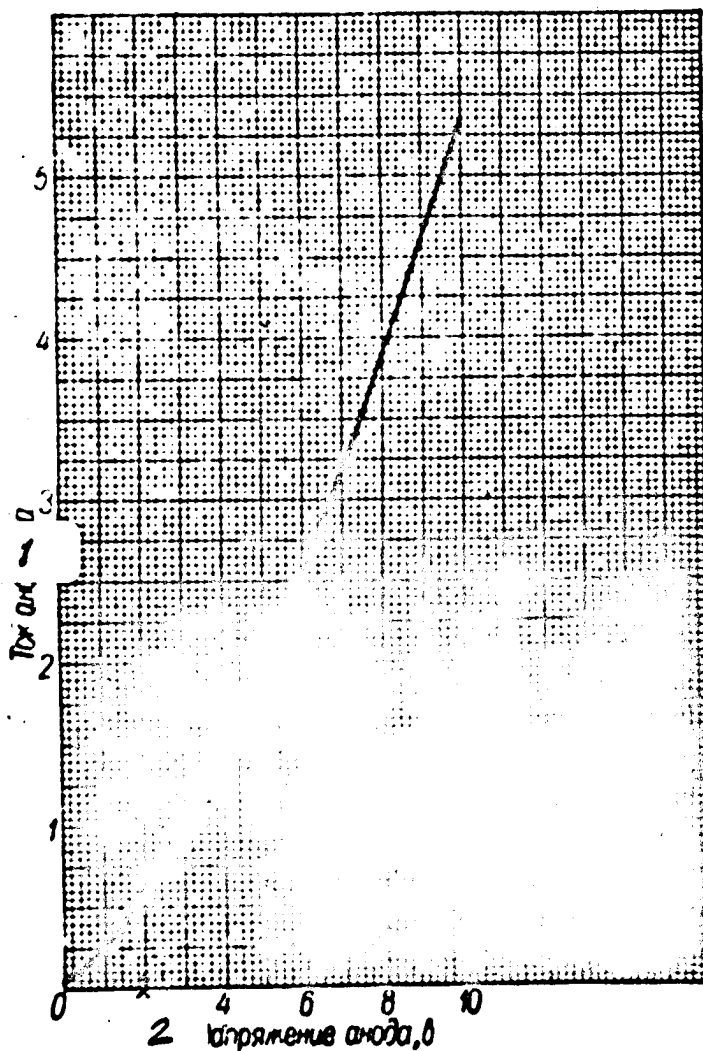
DUAL DIODE

2Kh1L

Average Plate Characteristic

(For a single diode)

Heater voltage, 2.2 v.



1) Plate current, ma; 2) plate voltage, v.

(Above material published April 1959, PKB, G-2)

HIGH-VOLTAGE RECTIFIER

2Ts2S

Basic function rectification of alternating current.Construction glass.General Data

Cathode — oxide-coated heater-type

Maximum height

114 mm

Maximum diameter

40 mm

Maximum weight

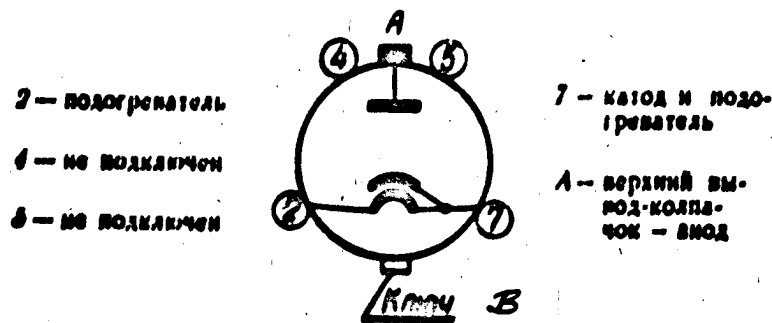
55 grams

Base — octal, Tsl-4-4A

Lead-cap, VK1-1

Dimension drawing — 18S

Working position — vertical

Connection Diagram for Electrodes and Pins

2) Heater; 4) not connected; 5) not connected; 7) cathode and heater;
 A) upper lead-cap — plate; B) Key.

Electrical Data

Heater voltage (~ or =)

2.5 v

Heater current

 1.75 ± 0.2 amp

Transformer secondary AC voltage

4.5 kv (eff)

Load resistance

0.6 megohm

Filter capacitance

0.06 μ f

Plate current*

 47.5 ± 17.5 ma

Rectified current*

no less than 6.8 ma

Service life

500 hours

Service-life criteria:

rectified current

no less than 5.4 ma

plate current

no less than 20 ma

*With a plate voltage of 200 v.

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

HIGH-VOLTAGE RECTIFIER

2Ts2S

Maximum Permissible Operating Data

Maximum heater voltage {~ or =}	2.75 v	
Minimum heater voltage {~ or =}	2.25 v	
Maximum peak inverse plate voltage	12.5 kv	
Maximum AC plate voltage	4.5 kv (eff)	←
Maximum peak plate current	45 ma	←
Maximum deviation in plate current at moment of turning on	100 ma	←
Maximum rectified current	7.5 ma	←

← Change introduced.

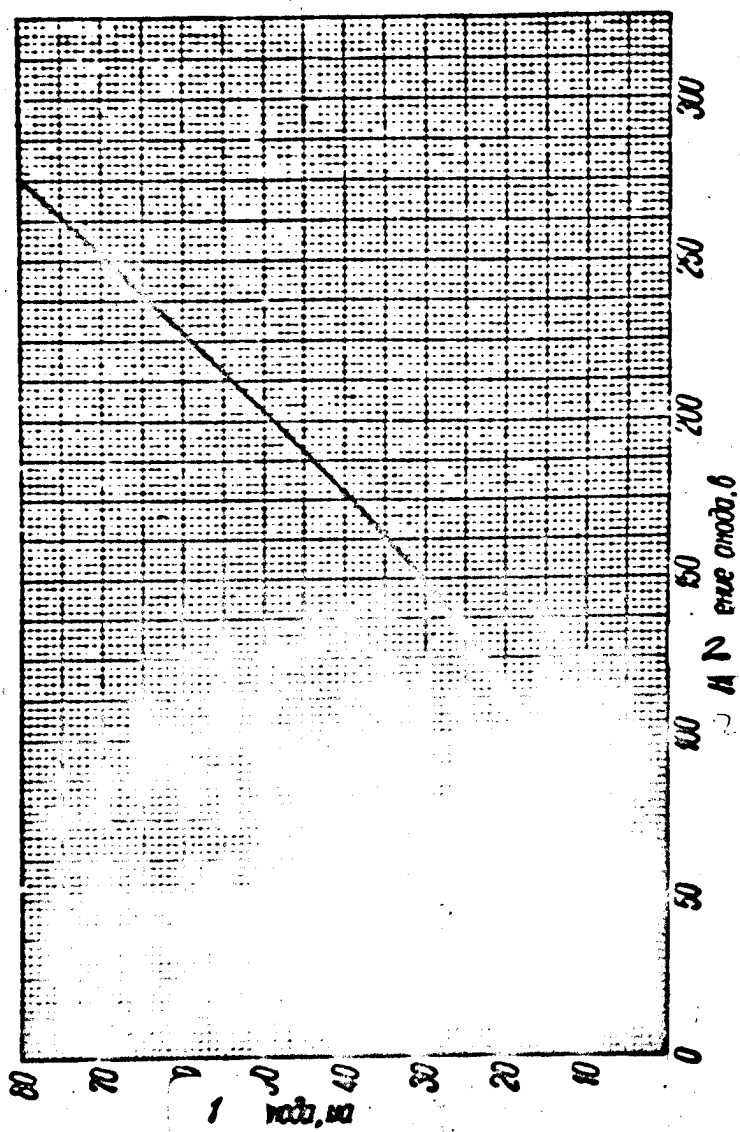
(Above material published April 1959, PKB, Sheet 1)

HIGH-VOLTAGE RECTIFIER

2Ts2S

Average Plate Characteristic

Heater voltage, 2.5 v.



1) Plate current, ma; 2) plate voltage, v.

(Above material published April 1959, PKB, G-1)

HIGH-VOLTAGE RECTIFIER

3Ts16S

Basic function rectification of voltage pulse from horizontal-sweep flyback in color television receivers and special devices.

Construction glass.

General Data

Cathode — oxide-coated heater-type

Maximum height

0.5 mm

Maximum diameter

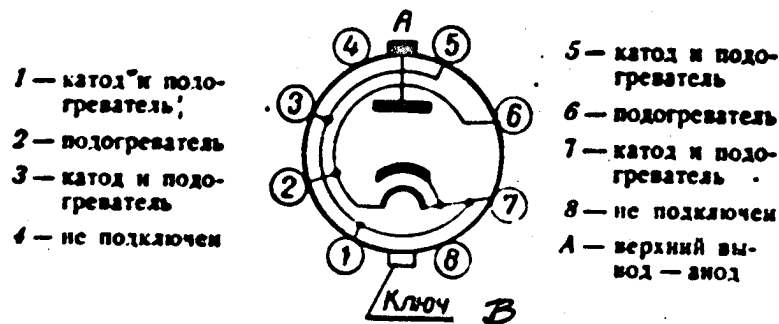
32.8 mm

Maximum weight

40 grams

Base — octal Tsl-4-8A

Dimension drawing — 20S

Connection Diagram for Electrodes and Leads

1) Cathode and heater; 2) heater; 3) cathode and heater; 4) not connected; 5) cathode and heater; 6) heater; 7) cathode and heater; 8) not connected; A) top lead — plate; B) Key.

Electrical Data

Heater voltage (~ or =)

3.15 v

Heater current

210 ± 20 ma

Plate current*

no less than 4.5 ma

Cathode warm-up time

no more than 15 sec

Service life

750 hours

Service-life criterion:

plate current*

no less than 3.6 ma

*For plate voltage of 120 v.

Interelectrode Capacitance

Plate-cathode

1.5 ± 0.4 μmf

Preliminary data.

(Above material published April 1959, PKB, Sheet 1)

HIGH-VOLTAGE RECTIFIER

3Ts16S

Maximum Permissible Operation Data

Maximum heater voltage ($\sim$ or $=$)	3.45 v
Minimum heater voltage ($\sim$ or $=$)	2.85 v
Maximum peak inverse pulsed plate voltage* ($=$)	35 kv
Maximum rectified current	1.1 ma
Maximum peak pulsed plate current	80 ma
Maximum horizontal-sweep frequency	12 kc
Maximum envelope temperature	150°C

*With a rectified voltage of no more than 28 kv, and a flyback pulse length of no more than 12 μ sec.

Resistance to External Effects

Maximum ambient temperature	+100°C
Minimum ambient temperature	-60°C
Maximum relative humidity at ambient temperature of up to +40°C	98%
Minimum atmospheric pressure	500 mm Hg
Maximum acceleration in the presence of vibration*	4 G

*In frequency range of 20 to 200 cps.

Preliminary data.

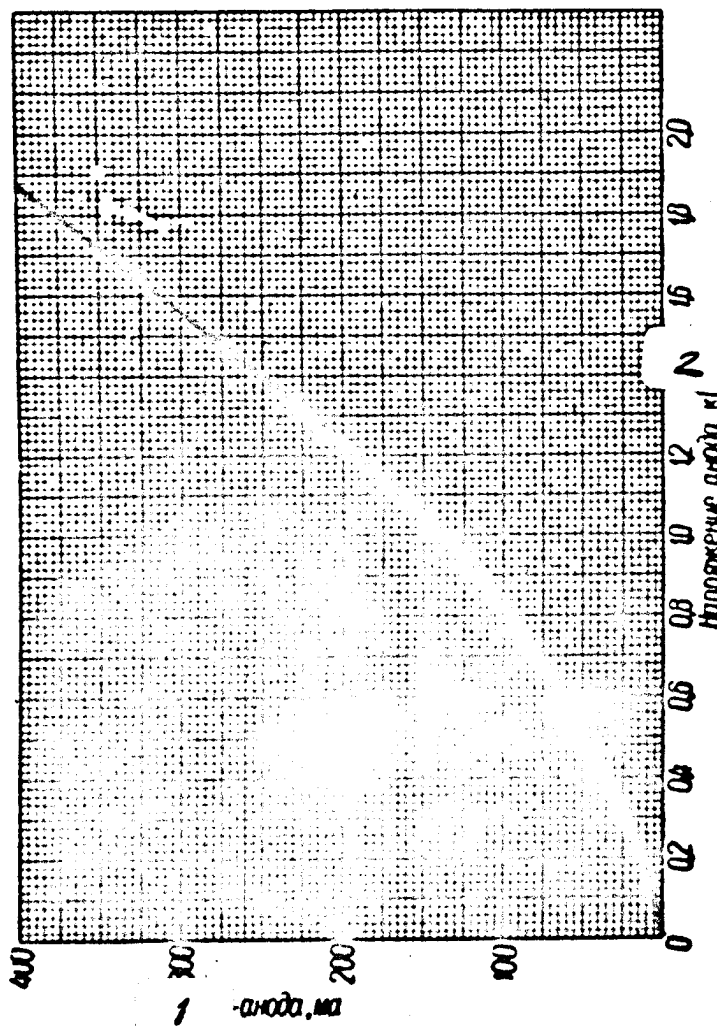
(Above material published April 1959, PKB, Sheet 1)

HIGH-VOLTAGE RECTIFIER

3Ts16S

Average Initial Plate Curve

Heater voltage, 3.15 v.



1) Plate current, ma; 2) plate voltage, kv.

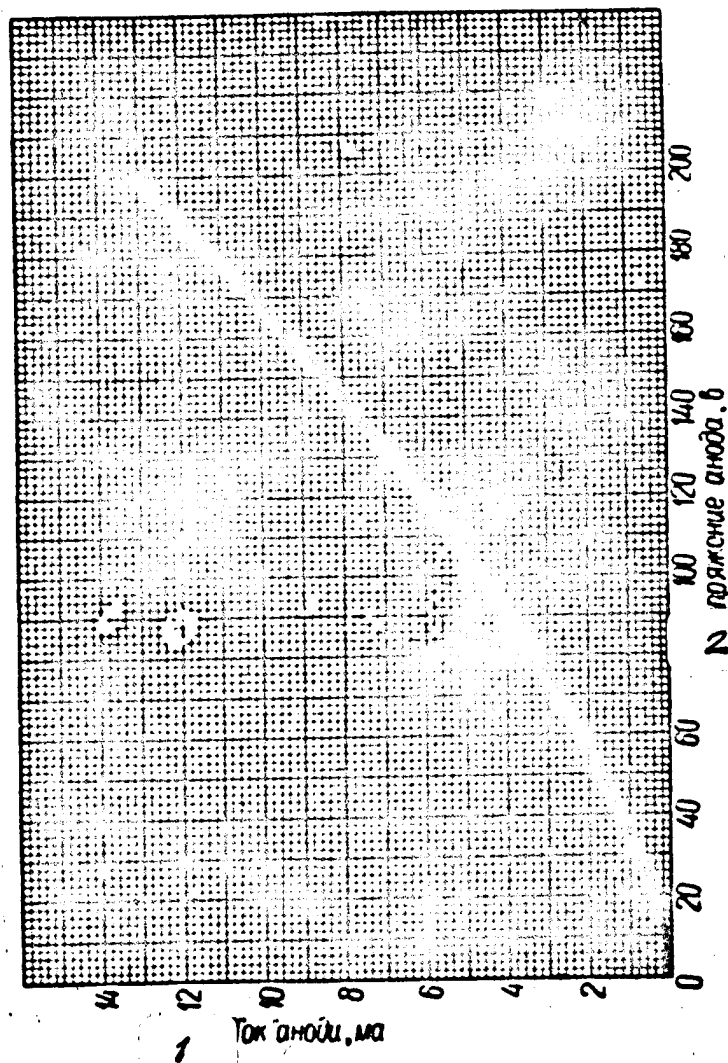
(Above material published April 1959, PKB, G-1)

HIGH-VOLTAGE RECTIFIER

3Ts16S

Average Plate Characteristic

Heater voltage, 3.15 v.



1) Plate current, ma; 2) plate voltage, v.

(Above material published April 1959, PKB, G-2)

GENERAL-PURPOSE SHARP-CUTOFF PENTODE

4Zh1L

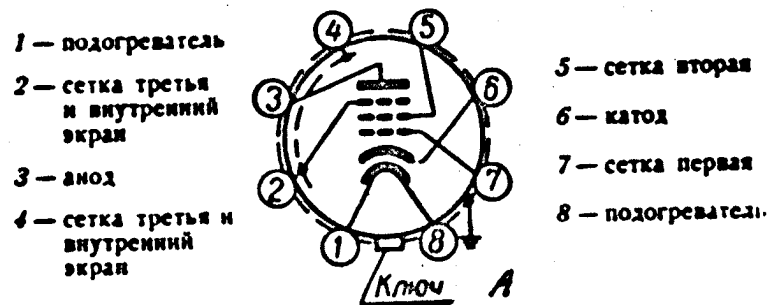
Basic function voltage and power amplifier and radio-frequency oscillator (up to 200 Mc).

Construction glass, using button stem with internal metal shield.

General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Maximum weight
 Base — shield with lock-in key, Ts4-1
 Dimension drawing — 4L

69 mm
 32 mm
 35 grams

Connection Diagram for Electrodes and Pins

1) Heater; 2) suppressor and internal shield; 3) plate; 4) suppressor and internal shield; 5) screen grid; 6) cathode; 7) first grid; 8) heater; A) Key.

Electrical Data

Heater voltage (~ or =)	4.2 v
Heater current	225 ± 15 ma
Plate voltage (=)	150 v
Suppressor voltage (=)	0 v
Screen voltage (=)	75 v
First-grid voltage (=)	0 v
Plate current	6.80 ^{+2.20} _{-2.05} ma
Plate current for heater voltage of 3.6 v	no less than 3.75 ma
Plate current for first-grid voltage of -2.1 v	2.35 ± 0.95 ma ←
Screen current*	0.55 ± 0.35 ma ←

*For first-grid voltage of -2.1 v.

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

GENERAL-PURPOSE SHARP-CUTOFF PENTODE

4Zh1L

Transconductance*	1.65 ± 0.45 ma/v	←
Penetrance, triode-connected**	5%	
Internal resistance***	no less than 1.0 megohm	
Output power****	no less than 0.50 watt	
Output power for heater voltage of 3.6 v****	no less than 0.40 watt	
First-grid back current*,*****	no more than 0.6 µa	
Leakage current between cathode and heater	no more than 20 µa	
Service life*****	2000 hours	
Service-life criteria: transconductance*	no less than 1.0 ma/v	
Plate current	no less than 3.8 ma	

*For first-grid voltage of -2.1 v.
 **For plate and screen voltages of 125 v and first-grid voltage so set that the plate and screen currents will equal 3 ma.
 ***First-grid voltage so set that the plate current will equal 2 ma.
 ****For plate and screen voltages of 250 v, effective first-grid voltage of 2.8 v, plate-load resistance of 35 kohm, screen-circuit resistance of 20 kohm, and resistance in cathode circuit of 500 ohms.
 *****With resistance in first-grid circuit of no more than 0.1 megohm.
 *****For plate and screen voltages of 220 v, resistance in first-grid, screen, and plate circuits of 0.3 kohm each and 700 ohms in cathode circuit.

Interelectrode Capacitances

Input	4.0 ± 0.3 µµf
Output	4.2 ± 0.3 µµf
Transfer	no more than 0.007 µµf
Plate-cathode*	no more than 0.007 µµf

*With all other electrodes grounded.

Maximum Permissible Operating Data

Maximum heater voltage { ~ or = }	4.8 v
Minimum heater voltage { ~ or = }	3.6 v
Maximum plate voltage (=):	
working	250 v
no-load	300 v
Maximum screen voltage (=):	
working	225 v
no-load	300 v
Maximum plate dissipation	2 watts
Maximum screen dissipation	0.7 watt
Maximum voltage between cathode and heater (=)	100 v
Maximum cathode current	11 ma

← Change introduced.

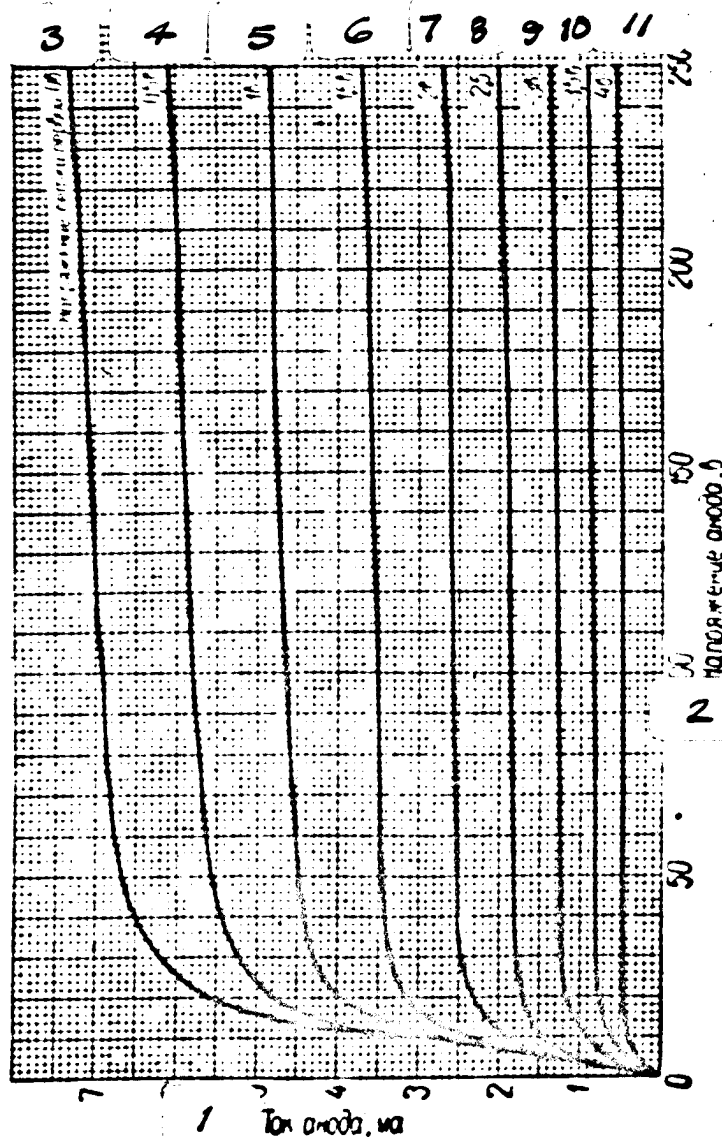
(Above material published April 1959, PKB, Sheet 1)

GENERAL-PURPOSE SHARP-CUTOFF OENTODE

4Zh1L

Average Plate Characteristics

Heater voltage, 4.2 v; screen voltage, 75 v; suppressor voltage, 0 v.



1) Plate current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) -2 v; 8) -2.5 v; 9) -3 v; 10) -3.5 v; 11) -4 v.

(Above material published April 1959, PKB, G-1)

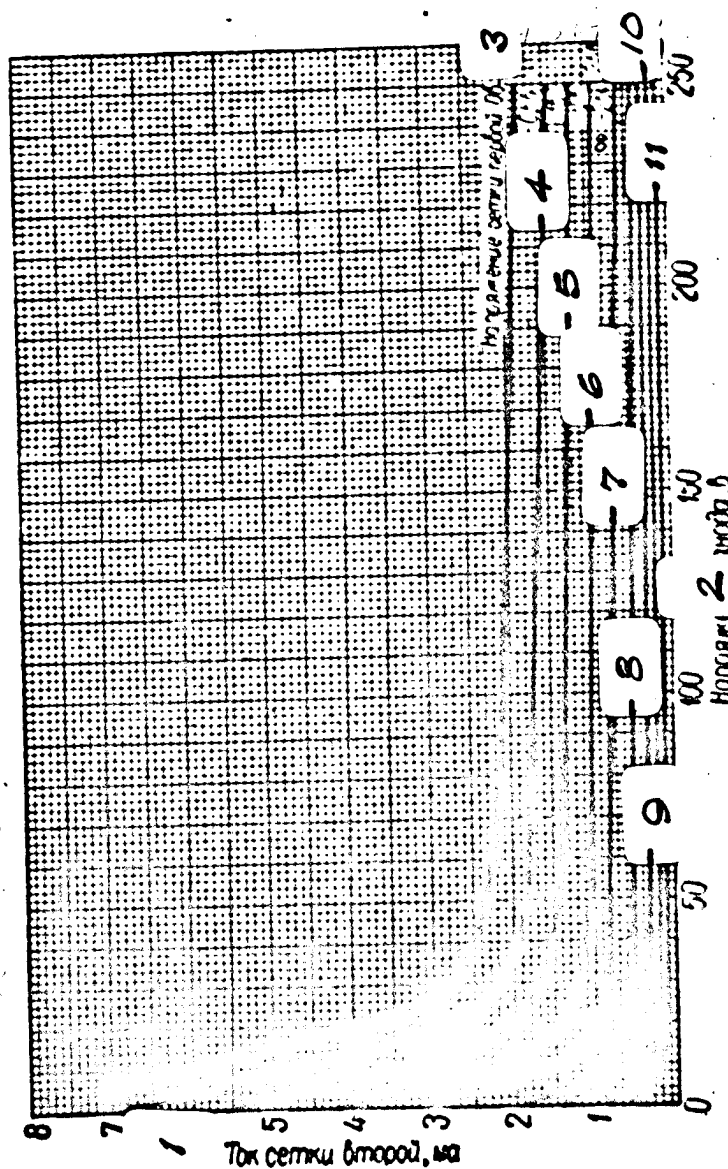
GENERAL-PURPOSE SHARP-CUTOFF PENTODE

4Zh1L

Average Grid-Plate Characteristics

(for screen grid)

Heater voltage, 4.2 v; screen voltage, 75 v; suppressor voltage, 0 v.



1) Screen current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) -2.5 v; 8) -2 v; 9) -3 v; 10) -3.5 v; 11) -4 v.

(Above material published April 1959, PKB, G-3)

GENERAL-PURPOSE SHARP-CUTOFF PENTODE

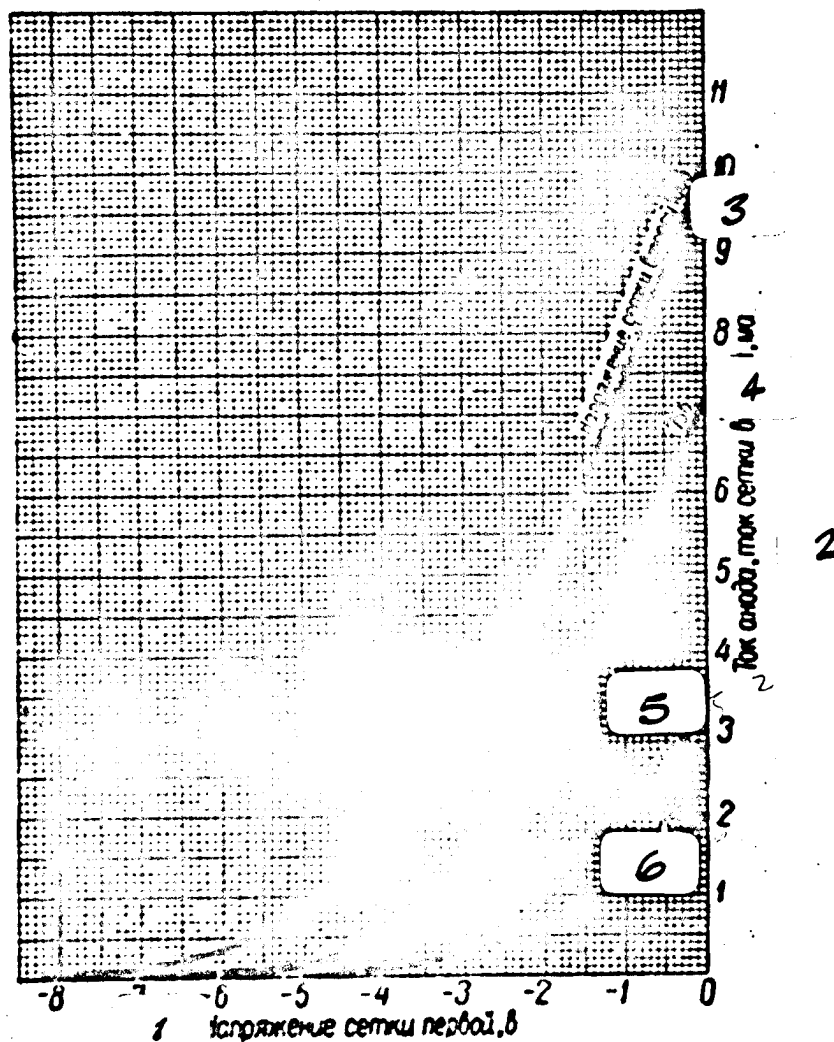
4Zh1L

Average Characteristics

—— Plate-grid

----- Grid (for screen grid)

Heater voltage, 4.2 v; plate voltage, 150 v.



- 1) First-grid voltage, v; 2) plate current, screen current, ma;
 3) screen voltage, 100 v; 4) 75 v; 5) 100 v; 6) 75 v.

(Above material published April 1959, PKB, G-2)

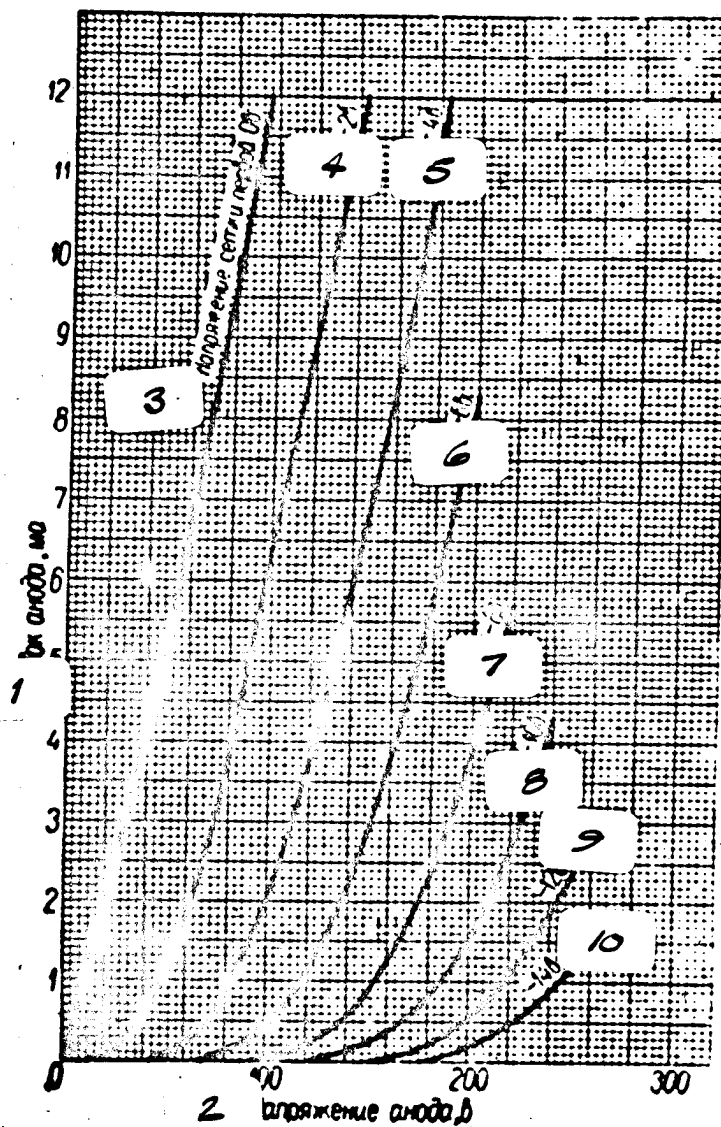
GENERAL-PURPOSE SHARP-CUTOFF PENTODE

4Zh1L

Average Plate Characteristics

(triode connection)

Heater voltage, 4.2 v.



1) Plate current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -2 v; 5) -4 v; 6) -6 v; 7) -8 v; 8) -10 v; 9) -12 v; 10) -14 v.

(Above material published April 1959, PKB, G-4)

TRANSMITTING PENTODE

4P1L

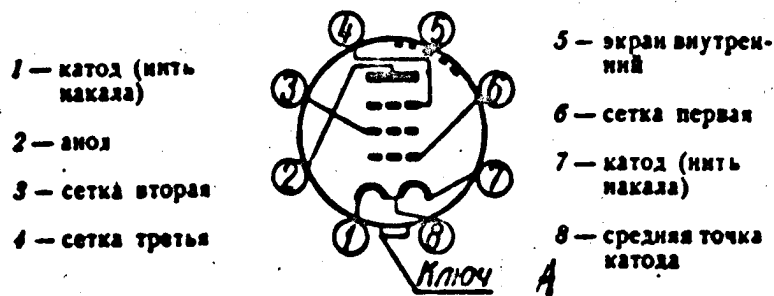
Basic function oscillator and radio-frequency power amplifier
(up to 100 Mc).

Construction glass, button stem.

General Data

Cathode — oxide-coated filament-type
Maximum height
Maximum diameter
Maximum weight
Base — with lock-in key
Dimension drawing — 2L

75 mm
32 mm
35 grams

Connection Diagram for Electrodes and Pins

1) Cathode (filament); 2) plate; 3) screen; 4) suppressor; 5) internal shield; 6) first grid; 7) cathode (filament); 8) cathode center tap; A) Key.

Electrical Data

Cathode connection	Parallel	Series
Filament voltage (~ or =)	2.1 v	4.2 v
Filament current	650 ± 50 ma	325 ± 25 ma
Plate voltage (=)		150 v
Suppressor voltage (=)		0 v
Screen voltage (=)		150 v
First-grid voltage at operating point* (=)	-7 ± 2.5 v	
Plate current**	60 ± 20 ma	
Plate current at filament voltage of 3.5 v**	no less than 35 ma	
Screen current*	no more than 6.5 ma	
Transconductance*,***	6 ^{+1.8} _{-1.5} ma/v	
Penetrance, triode connected****	10.5 ± 2%	

*For plate current of 35 ma.

**For first-grid voltage of -3.5 v.

***For screen-voltage increment of ± 0.5 v.

****For plate voltages of 125 and 175 v and plate current of 35 ma.

(Above material published April 1959, PKB, Sheet 1)

TRANSMITTING PENTODE

4P1L

Output power*,**	no less than 4.2 watts
Output power with heater voltage of 3.6 v*	no less than 3.5 watts
First-grid back current***	no more than 1.5 μ a
Cathode warm-up time	no more than 1.5 sec
Insulation resistance of third grid	
at filament voltage of 4.8 v	no less than 10 megohm
Service life****	1000 hours
Service-life criteria:	
output power*,**	no less than 3.3 watts
output power at filament voltage	
of 3.6 watts*	no less than 2.5 watts

*In power-amplifier operation, with plate voltage of 200 v, first-grid voltage of -20 v, suppressor voltage of 15 v, signal voltage in first-grid circuit of 18 v (eff), and frequency of 12 Mc.

** For cathode current not exceeding 50 ma, first-grid current of about 1.0 ma, and screen current not exceeding 10 ma.

***For plate current of 35 ma and resistance in first-grid circuit of 0.1 megohm.

****For plate and screen voltages of 440 v, suppressor voltage of 0 v, effective excitation voltage in first-grid circuit of 100 v, resistance in first-grid circuit of 25 kohm, resistance in screen circuit of 40 kohm, resistance in plate circuit of 4 kohm, at a frequency of 50 cps.

Interelectrode Capacitances

Input	8.5 $\pm$ 1 μ mf
Output	9.4 $\pm$ 1.5 μ mf
Transfer	no more than 0.1 μ mf

Maximum Permissible Operating Data

Cathode connection	Parallel	Series
Maximum filament voltage ($\sim$ or $=$)	2.35 v	4.7 v
Minimum filament voltage ($\sim$ or $=$)	1.95 v	3.9 v
Maximum plate voltage: ($=$)		
working		250 v
no-load		300 v
Maximum screen voltage: ($=$)		
working		250 v
no-load		300 v
Maximum output power*	about	4.5 watts
Maximum plate dissipation		7.5 watts
Maximum screen dissipation		1.5 watts
Maximum cathode current		50 ma
Maximum resistance in first-grid circuit		0.5 megohm
Maximum resistance in suppressor circuit		0.1 megohm

*At frequency not exceeding 30 Mc, and suppressor voltage of 15 v.

(Above material published April 1959, PKB, Sheet 1)

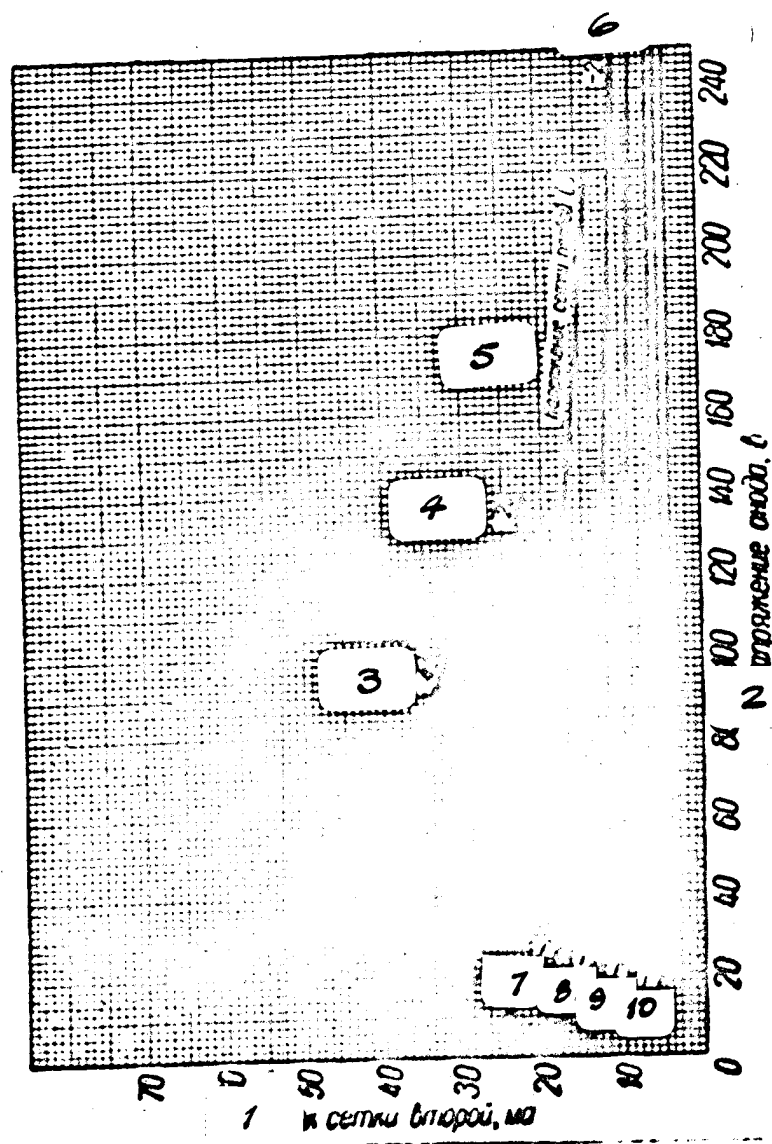
TRANSMITTING PENTODE

4P1L

Average Plate-Grid Characteristics

(for screen grid)

Filament voltage, 4.2 v; screen voltage, 150 v; suppressor voltage, 0 v.



1) Screen current, ma; 2) plate voltage, v; 3) 4 v; 4) 2 v; 5) first-grid voltage, 0 v; 6) -2 v; 7) -4 v; 8) -6 v; 9) -8 v; 10) -10 v.

(Above material published April 1959, PKB, G-2)

TRIODE

4S3S

Basic function microwave oscillator.Construction glass, with guide key for upper socket.General Data

Cathode — oxide-coated heater-type

Maximum height

49.2 mm

Maximum diameter

32 mm

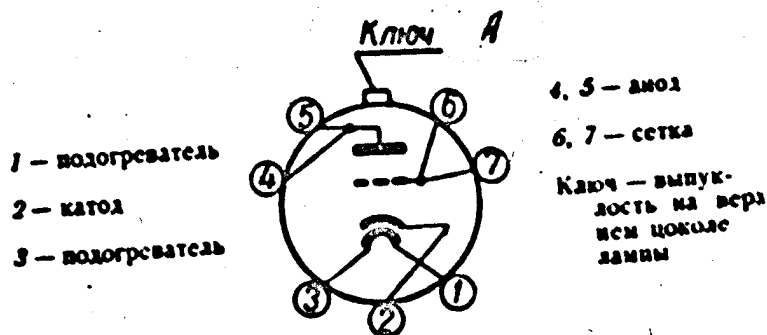
Maximum weight

38 grams

Number of pins

7

Dimension drawing — 27 S

Connedtion Diagram for Electrodes and Pins

1) Heater; 2) cathode; 3) heater; 4, 5) plate; 6, 7) grid; A) Key:
Key — projection from upper tube base.

Electrical Data

Heater voltage (~ or =)

4.4 v

Heater current

300 ± 30 ma

Plate voltage (=)

100 v

Grid voltage (=)

-4 v

Grid voltage at operating point**

-4 ± 2 v

Plate current*

27.5 ± 12.5 ma

Transconductance**

3 ± 1 ma/v

Amplification factor**

12.5 ± 4.5

Output power***

no less than 275 mw

Grid back current****

no more than 0.6 μa

*For 0 grid voltage.

**For plate current of 10 ma.

***For plate voltage of 130 v, cathode current of 30 ma, and a wavelength of 30 cm.

****For heater voltage of 5 v, plate voltage of 200 v, and plate current of 20 ma.

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

TRIODE

4S3S

Leakage current between cathode and heater	no more than 100 μ a	
Service life	400 hours	←
Service-life criteria:		
output power*	no less than 206 mw	←
back current	no more than 1.2 μ a	

*For plate voltage of 130 v, cathode current of 30 ma, and at a wavelength of 30 cm.

Interelectrode Capacitances

Input	1.55 $\pm$ 0.25 μ f
Output	0.65 $\pm$ 0.15 μ f
Transfer	1.15 $\pm$ 0.25 μ f

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or =)	5 v	
Minimum heater voltage ($\sim$ or =)	4 v	
Maximum plate voltage (=)	300 v	
Maximum plate dissipation	5 watts	
Maximum grid dissipation	0.25 watt	
Maximum mean cathode current	30 ma	←
Maximum voltage between cathode and heater (=)	100 v	
Minimum wavelength	30 cm	
Maximum envelope temperature	150°C	

← Change and addition introduced.

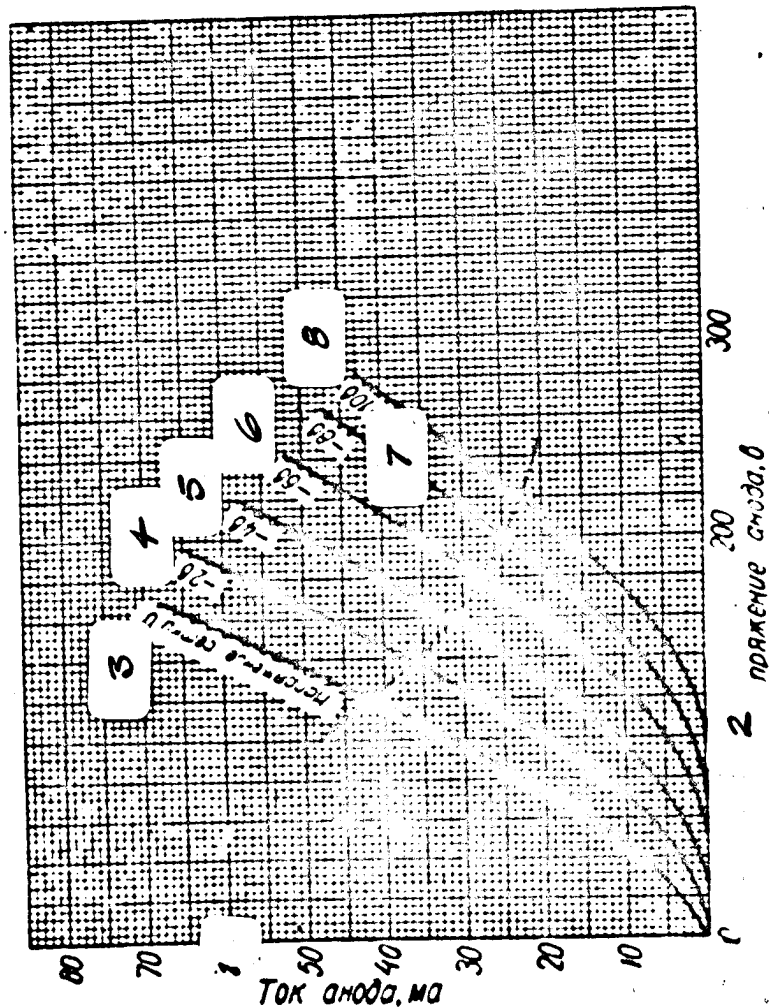
(Above material published April 1959, PKB, Sheet 1)

TRIODE

4S3S

Average Plate Characteristics

----- Maximum permissible plate dissipation;
Heater voltage, 4.4 v.



- 1) Plate current, ma; 2) plate voltage, v; 3) grid voltage, 0 v;
4) -2 v; 5) -4 v; 6) -6 v; 7) -8 v; 8) -10 v.

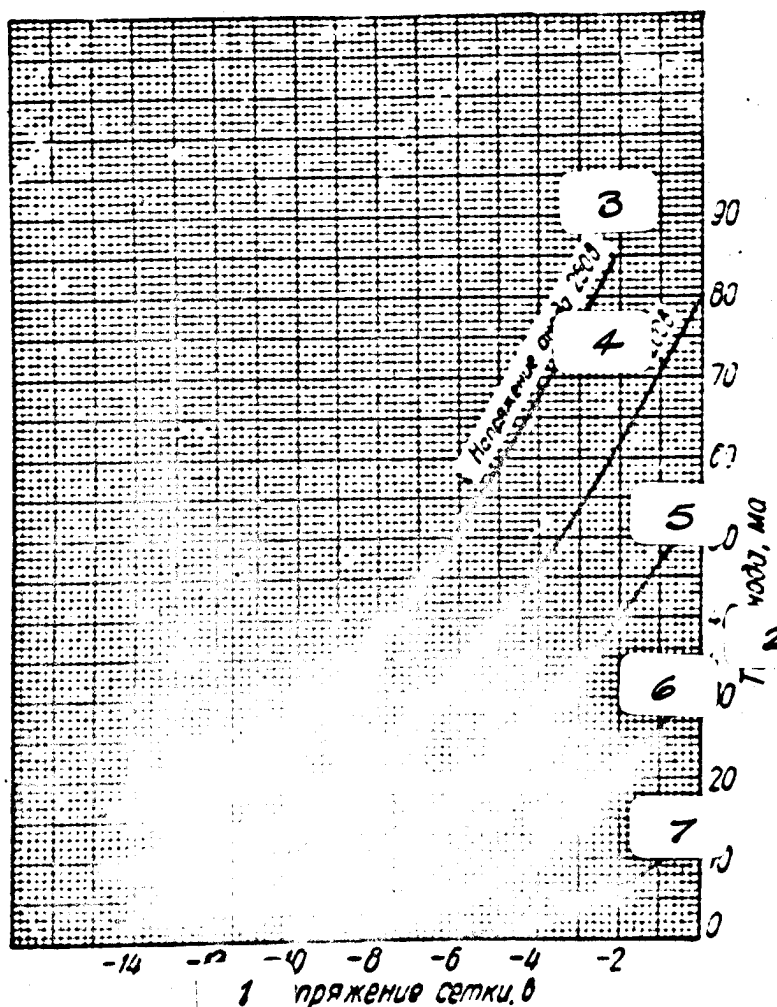
(Above material published April 1959, PKB, G-1)

TRIODE

4S3S

Average Plate-Grid Characteristics

Heater voltage, 4.4 v.



- 1) Grid voltage, v; 2) plate current, ma; 3) plate voltage, 250 v;
 4) 200 v; 5) 150 v; 6) 100 v; 7) 50 v.

(Above material published April 1959, PKB, G-2)

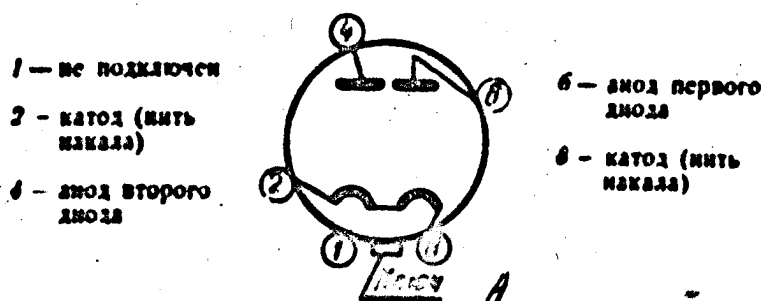
DUAL-PLATE RECTIFIER

5Ts3S

Basic Function AC rectification.Construction glass.General Data

Cathode —oxide-coated filament-type
 Maximum height
 Maximum diameter
 Maximum weight
 Base — octal Tsl-5-5G
 Dimension drawing — 1S

140 mm
 52 mm
 72 grams

Connection Diagram for Electrodes and Pins

- 1) Not connected; 2) cathode (filament); 4) plate of second diode;
 6) plate of first diode; 8) cathode (filament); A) Key.

Electrical Data

Filament voltage (~ or =)	5 v
Filament current	3 ± 0.3 amp
Alternating voltage across transformer secondary	2 x 500 v (eff)
Resistance in plate circuit	2 kohm
Filter capacitance	4 μ f
Emission current for each cathode*	no less than 225 ma
Rectified current	no less than 230 ma
Insulation resistance of each plate	no less than 20 megohm
Service life	500 hours
Service-life Criterion: rectified current	no less than 200 ma

*With plate voltage (=) of 75 v.

(Above material published April 1959, PKB, Sheet 1)

DUAL-PLATE RECTIFIER

5Ts3S

Maximum Permissible Operating Data

Maximum filament voltage (~ or =)	5.5 v
Minimum filament voltage (~ or =)	4.5 v
Maximum peak inverse plate voltage	1.7 kv
Maximum mean rectified current	250 ma
Maximum peak plate current	750 ma

Typical Operating Conditions

As full-wave AC rectifier

	No. 1	No. 2
Alternating voltage across transformer secondary, v (eff)	2 x 500	2 x 500
Total pure resistance in plate circuit,* ohms	50	50
Filter capacitance, μ f	4	20
Peak inverse plate voltage, kv	1.2	1.3
Rectified current, ma	250	225
Rectified voltage, v	500	570
Peak plate current, ma	730	750

*The total pure resistance in the plate circuit is formed by the resistance component of half of the transformer secondary. If the resistance value for half of the transformer secondary is less than the value indicated, then in order to limit the peak plate current, it is necessary to connect additional resistance into the plate circuit.

(Above material published April 1959, PKB, Sheet 1)

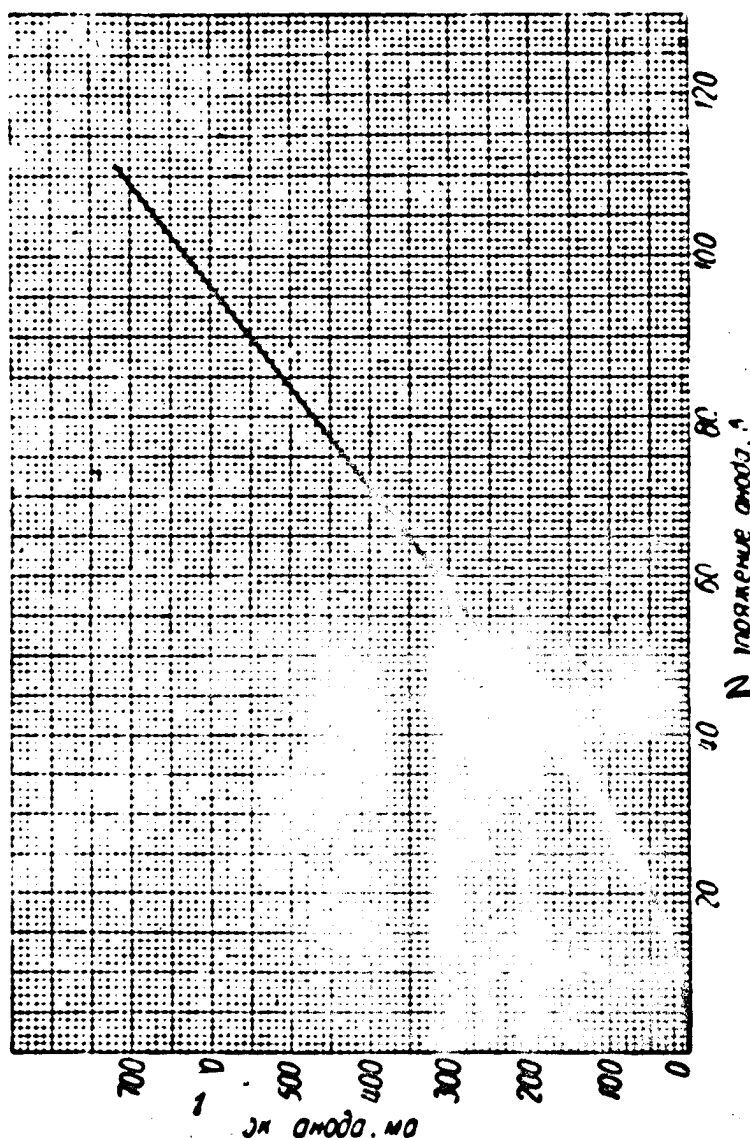
DUAL-PLATE RECTIFIER

5Ts3S

Average Plate Characteristic Curve

(for a single diode)

Filament voltage, 5 v.



1) Plate current, ma; 2) plate voltage, v.

(Above material published April 1959, PKB, G-1)

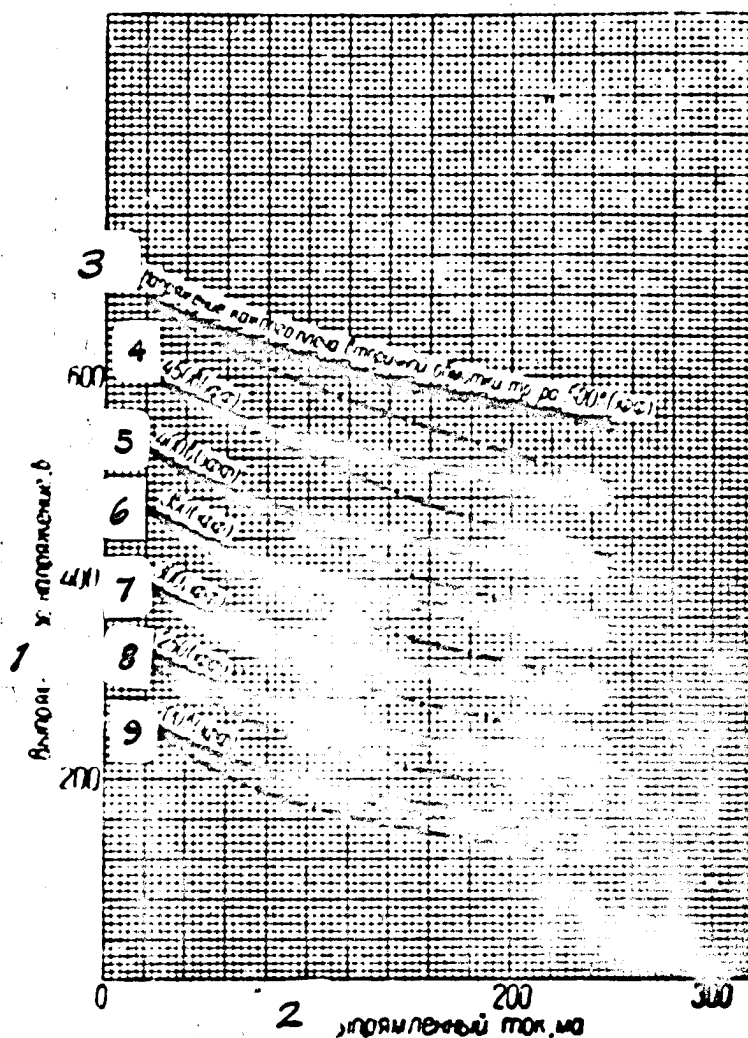
DUAL-PLATE RECTIFIER

5Ts3S

Average Rectified-Voltage Curves as a Function of Rectified Current

— Filter capacitance, 20 μf
 ----- Filter capacitance, 10 μf
 -.-.-.- filter capacitance, 4 μf

Pure resistance in circuit of each anode, 90 ohms; filament voltage, 5 v.



1) Rectified voltage, v; 2) rectified current, ma; 3) voltage in each side of transformer secondary, 500 v (eff); 4) 450 v (eff); 5) 400 v (eff); 6) 350 v (eff); 7) 300 v (eff); 8) 250 v (eff); 9) 200 v (eff).

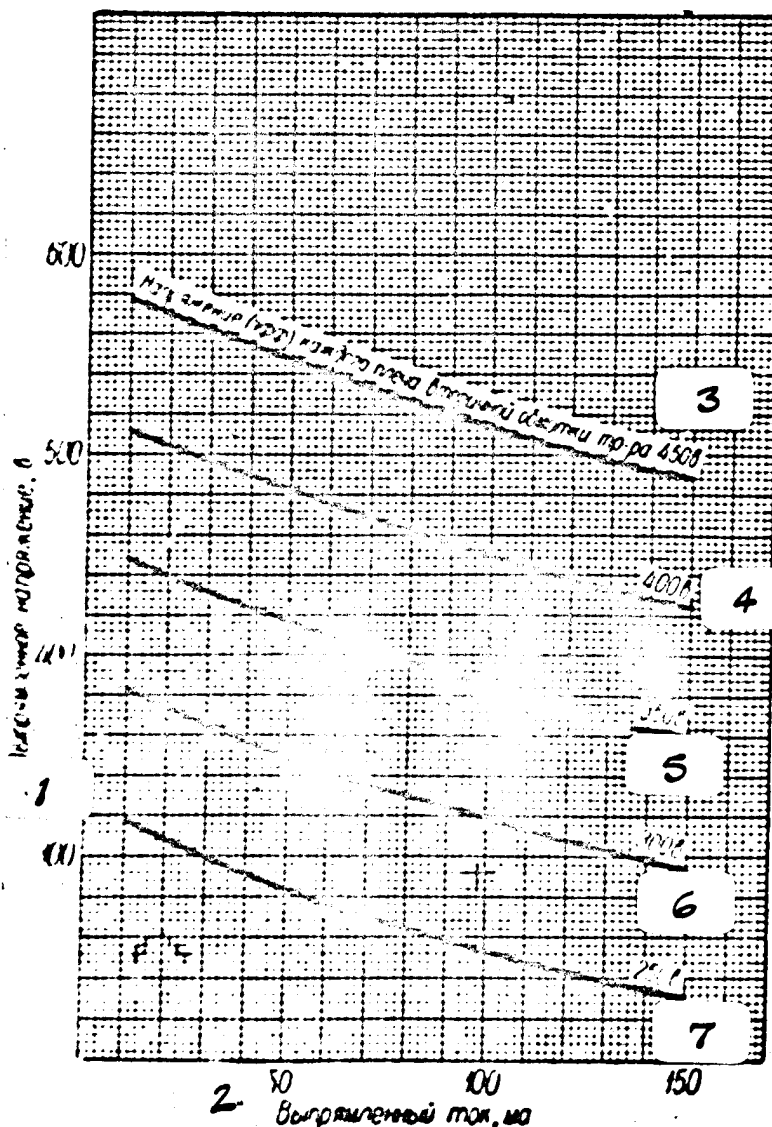
(Above material published April 1959, PKB, G-3)

DUAL-PLATE RECTIFIER

5Ts3S

Average Rectified-Voltage Curves as a Function of Rectified Current

Filament voltage, 5 v; filter capacitance, 4 μ f; pure resistance in circuit of each plate, 30 ohms.



1) Rectified voltage, v; 2) rectified current, ma; 3) voltage (eff) for each side of transformer secondary, 450 v; 4) 400 v; 5) 350 v; 6) 300 v; 7) 250 v.

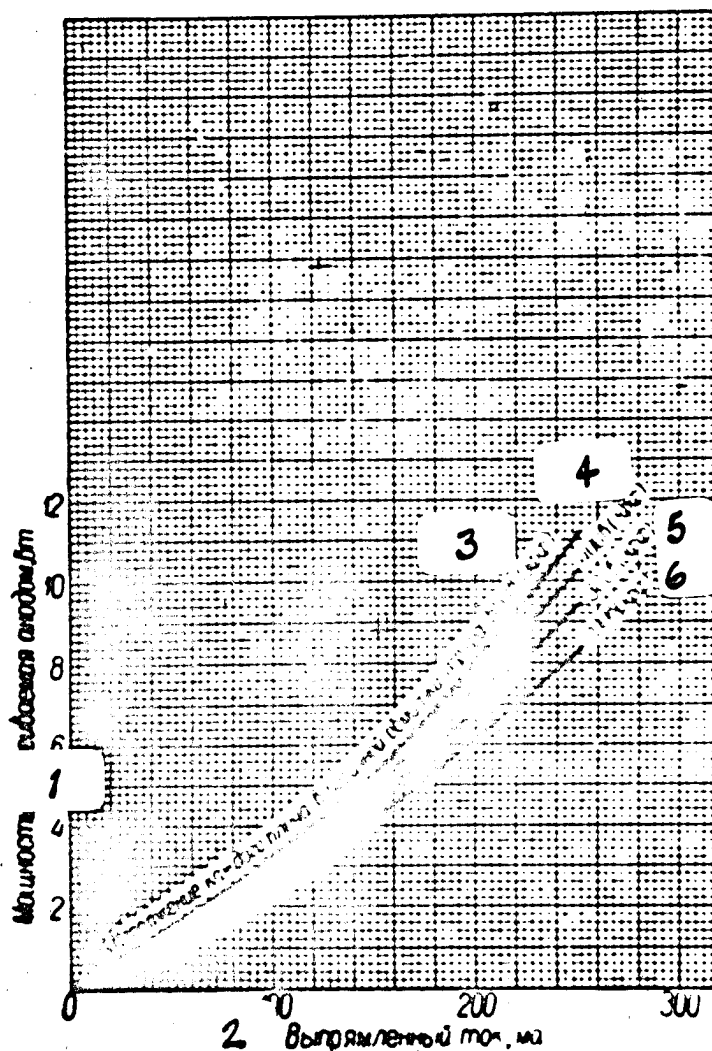
(Above material published April 1959, PKB, G-2)

DUAL-PLATE RECTIFIER

5Ts3S

Average Curves for Plate Power Dissipation as a Function of Rectified Current

Filter capacitance, 20 μ f; filament voltage, 5 v; pure resistance in circuit of each plate, 90 ohms.



1) Plate power dissipation, watts; 2) rectified current, ma; 3) voltage in each side of transformer secondary, 500 v (eff); 4) 400 v (eff); 5) 300 v (eff); 6) 200 v (eff).

(Above material published April 1959, PKB, G-4)

DUAL-PLATE RECTIFIER

5Ts4M

Basic function AC rectification.Construction glassGeneral Data

Cathode — oxide-coated heater-type

Maximum height

92 mm

Maximum diameter

33 mm

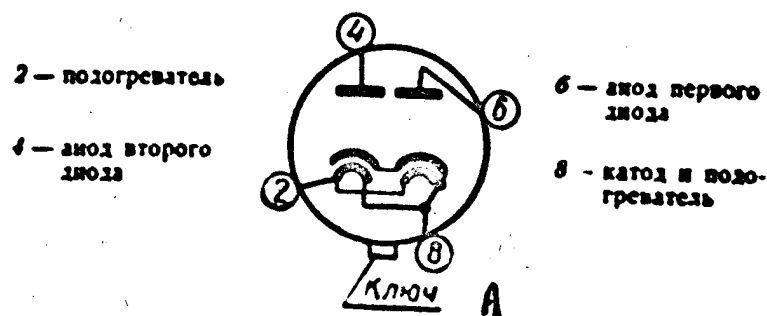
Maximum weight

45 grams

Socket — octal, Tsl-1-4V

Dimension drawing — 24S

Note: The tube can also be produced in a cylindrical envelope with a base sleeve (Tsl-1-4V), or with a can-type base (Tsl-4-4V).

Connection Diagram for Electrodes and Pins

- 2) Heater; 4) plate of second diode; 6) plate of first diode;
8) cathode and heater; A) Key.

Electrical Data

Heater voltage (~ or =)

5 v

Heater current

2 ± 0.2 amp

Alternating voltage across transformer secondary

2 x 400 v (eff)

Plate-circuit resistance

3300 ohms

Filter capacitance

4 μf

Emission current for each diode*

no less than 300 ma

Rectified current

no less than 133 ma

Rectified current for heater voltage
of 4.5 v

no less than 110 ma

Insulation resistance for each plate

no less than 20 megohm

Service life

500 hours

Service-life criterion:
rectified current

no less than 115 ma

*For plate voltage (=) of 50 v.

(Above material published April 1959, PKB, Sheet 1)

DUAL-PLATE RECTIFIER

5Ts4M

Maximum Permissible Operating Data

Maximum heater voltage { ~ or = }	5.5 v
Minimum heater voltage { ~ or = }	4.5 v
Maximum peak inverse plate voltage	1550 v
Maximum mean rectified current	140 ma
Maximum peak plate current	415 ma
Maximum deviation of plate current at instant of turn-on	1400 ma

Resistance to External Effect

Minimum atmospheric pressure	41 mm Hg
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Note: The minimum atmospheric pressure is 35 mm Hg for tubes produced in cylindrical envelopes (with flat stems).

(Above material published April 1959, PKB, Sheet 1)

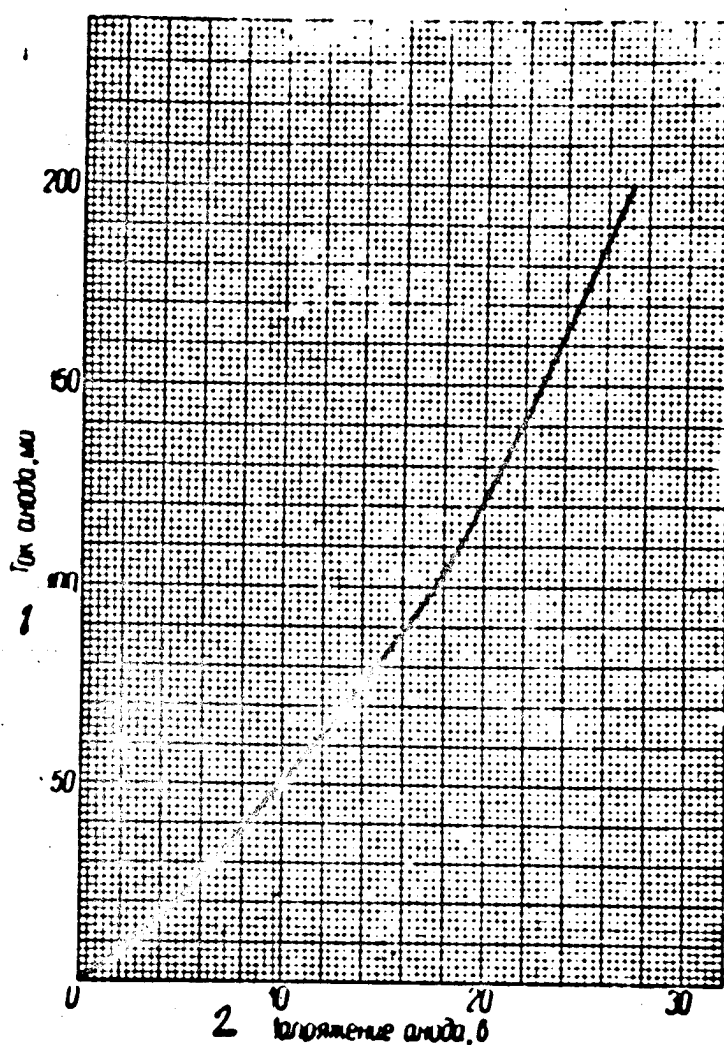
DUAL-PLATE RECTIFIER

5Ts4M

Average Plate Curve

(for a single plate)

Heater voltage, 5 v.



1) Plate current, ma; 2) plate voltage, v.

(Above material published April 1959, PKB, G-1)

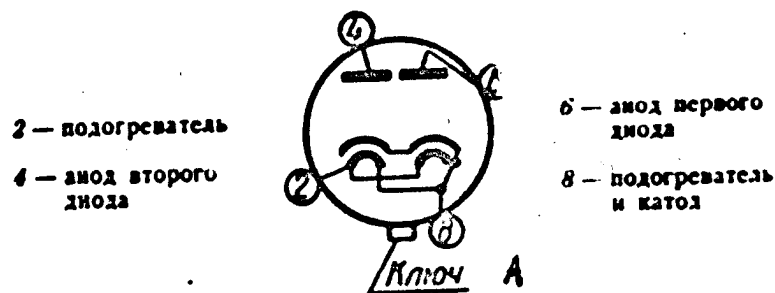
DUAL-PLATE RECTIFIER

5Ts4S

Basic function AC rectification.Construction glass.General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Maximum weight
 Base, octal, Tsl-4-4V
 Dimension drawing — 2S

115 mm
 42 mm
 55 grams

Connection Diagram for Electrodes and Pins

2) Heater; 4) plate of second diode; 6) plate of first diode;
 8) heater and cathode; A) Key.

Electrical Data

Heater voltage (~ or =)	5 v
Heater current	2 ± 0.2 amp
Alternating voltage across transformer secondary	2 x 500 v (eff)
Resistance in plate circuit	4.7 kohm
Filter capacitance	4 μ f
Emission current for each cathode*	no less than 300 ma
Rectified current	no less than 122 ma
Rectified current for heater voltage of 4.5 v	no less than 100 ma
Insulation resistance for each plate	no less than 20 megohm
Service life	500 hours
Service-life criterion: . rectified current	no less than 105 ma

*For plate voltage (=) of 50 v.

(Above material published April 1959, PKB, Sheet 1)

DUAL-PLATE RECTIFIER

5Ts4S

Maximum Permissible Operating Data

Maximum heater voltage (~ or =)	5.5 v
Minimum heater voltage (~ or =)	4.5 v
Maximum peak inverse plate voltage	1.35 kv
Maximum mean rectified current	125 ma
Maximum peak plate current	375 ma
Maximum deviation in plate current at instant of turn-on	1.25 amp

(Above material published April 1959, PKB, Sheet 1)

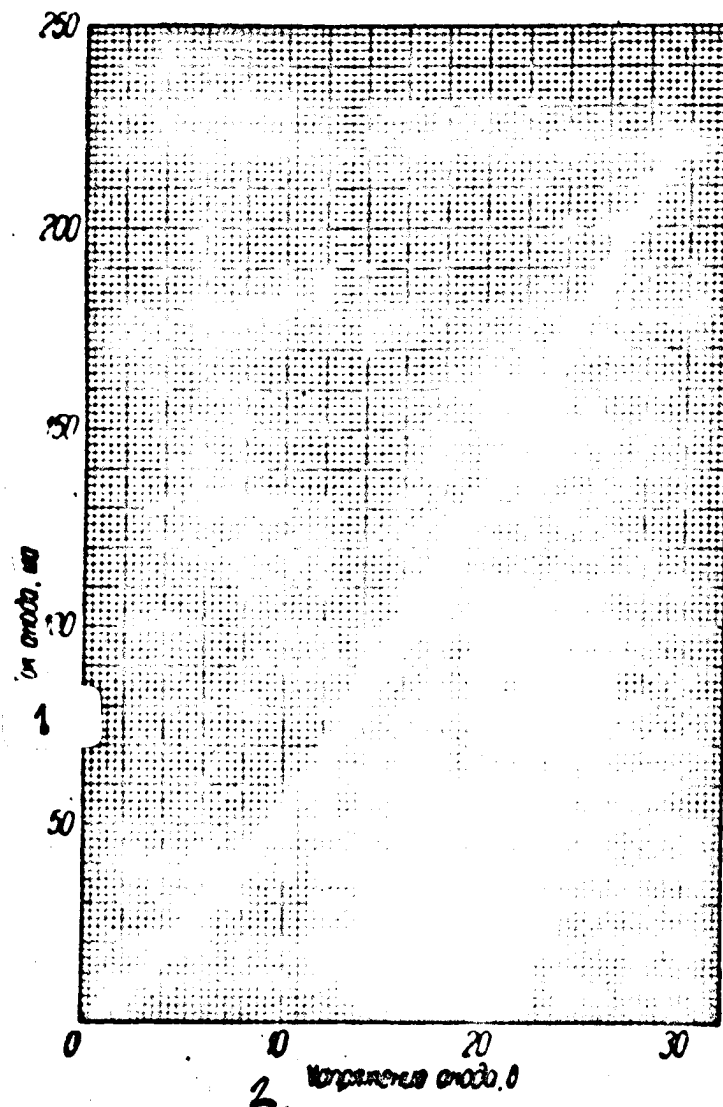
DUAL-PLATE RECTIFIER

5Ts4S

Average Plate Curve

(for a single plate)

Heater voltage, 5 v.



1) Plate current, ma; 2) plate voltage, v.

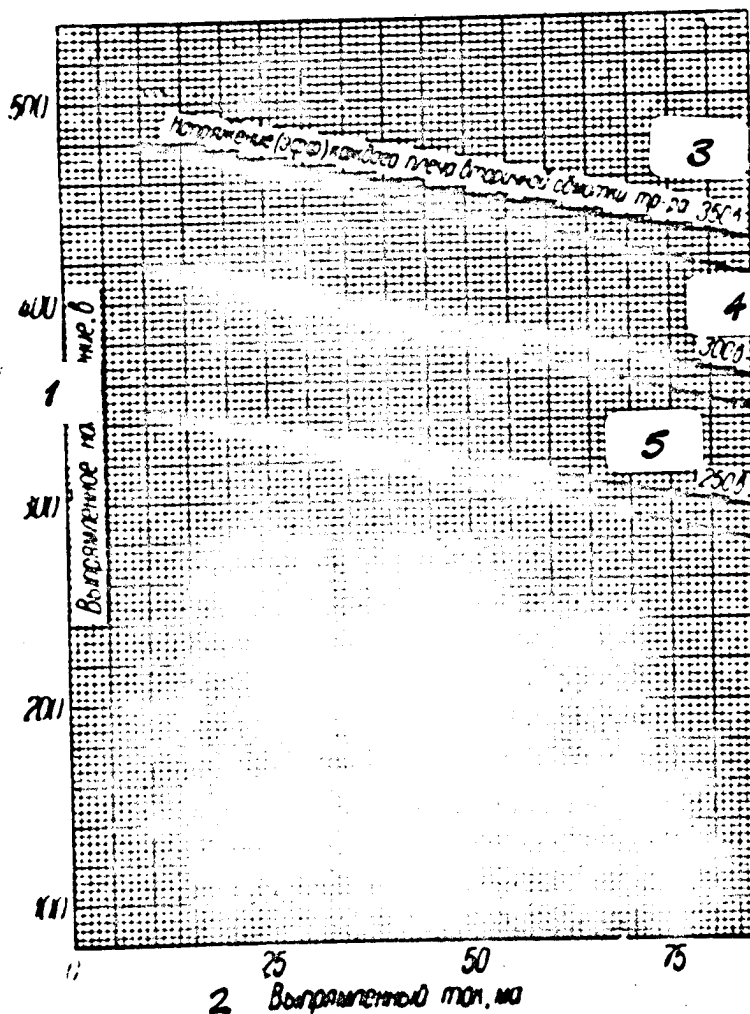
(Above material published April 1959, PKB, G-1)

DUAL-PLATE RECTIFIER

5Ts4S

Average Rectified-Voltage Curves as a Function of Rectified Current——— Filter capacitance, 8 μ f.----- Filter capacitance, 4 μ f.

Heater voltage, 5 v; total pure resistance in circuit of each plate, 30 ohms.



1) Rectified voltage, v; 2) rectified current, ma; 3) voltage (eff) for each side of transformer secondary, 350 v; 4) 300 v; 5) 250 v.

(Above material published April 1959, PKB, G-2)

DUAL-PLATE RECTIFIER

5Ts8S

Basic function AC rectification.Construction glass baseless.General Data

Cathode — oxide-coated heater-type

Maximum height

134 mm

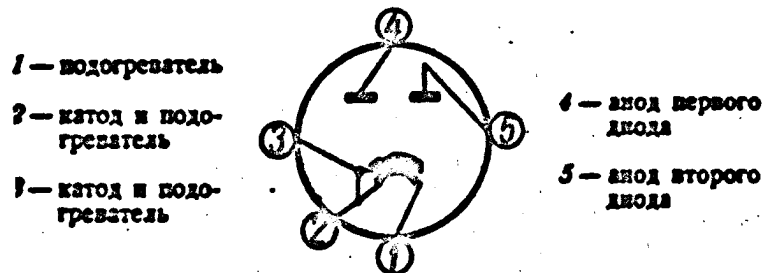
Maximum diameter

52 mm

Maximum weight

110 grams

Dimension drawing — 31S

Connection Diagram for Electrodes and Pins

1) Heater; 2) cathode and heater; 3) cathode and heater; 4) plate of first diode; 5) plate of second diode.

Electrical Data

Heater voltage (~ or =)	5 v
Heater current	5 ± 0.75 amp
Alternating voltage across transformer secondary	2 x 500 v (eff)
Resistance in plate circuit	1000 ohms
Filter capacitance	4 μ f
Emission current for each diode*	no less than 300 ma
Rectified current	no less than 400 ma
First-plate — cathode** leakage current	no more than 50 μ a
Second-plate — cathode** leakage current	no more than 50 μ a
Service life ***	500 hours
Service-life criterion: rectified current	no less than 360 ma

*For plate voltage (=) of 75 v.

**For heater voltage of 0 v, plate voltage (=) of 500 v.

***For a rectified current of 400 ma.

(Above material published April 1959, PKB, Sheet 1)

DUAL-PLATE RECTIFIER

5Ts8S

Maximum Permissible Operating Data

Maximum heater voltage (~ or =)	5.5 v
Minimum heater voltage (~ or =)	4.5 v
Maximum peak plate current	1.2 amp
Maximum peak inverse plate voltage	1700 v
Maximum mean rectified current	420 ma
Maximum plate-current deviation at instant of turn-on	5 amp
Maximum plate power dissipation	30 watts
Maximum envelope temperature	200°C

Typical Operating Conditions

Heater voltage (~ or =)	5 v
Alternating voltage across transformer secondary	2 x 500 v (eff)
Rectified current	400 ma

Notes:

1. It is possible to operate these tubes in the following regimes:
 - a) Continuous - for a heater voltage (~ or =) of 5 v, rectified current of 380 ma, and peak inverse plate voltage of 1700 v;
 - b) Intermittent - for no more than five minute periods - with heater voltage (~ or =) of 5 v, rectified current of 420 ma, and peak inverse plate voltage of 1700 v.
2. It is possible to apply the heater and plate voltages simultaneously.
3. It is recommended that a 1.5 amp cartridge fuse be connected into each plate circuit.

(Above material published April 1959, PKB, Sheet 1)

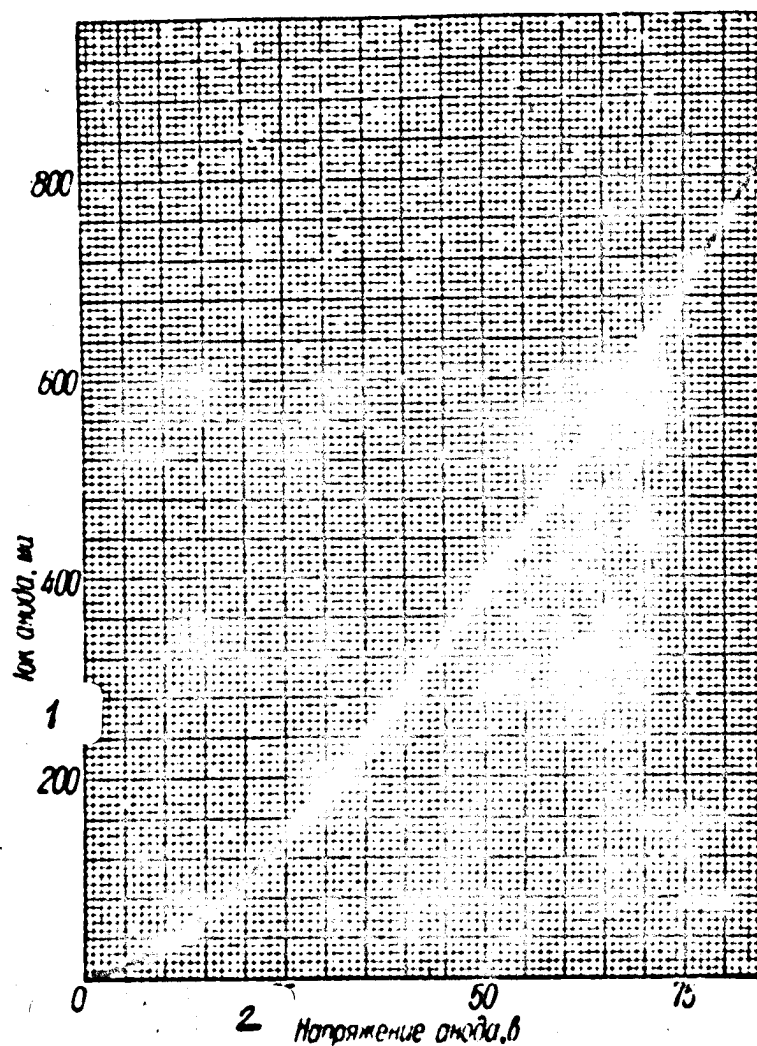
DUAL-PLATE RECTIFIER

5Ts8S

Average Plate Curve

(for a single plate)

Heater voltage, 5 v.



1) Plate current, ma; 2) plate voltage, v.

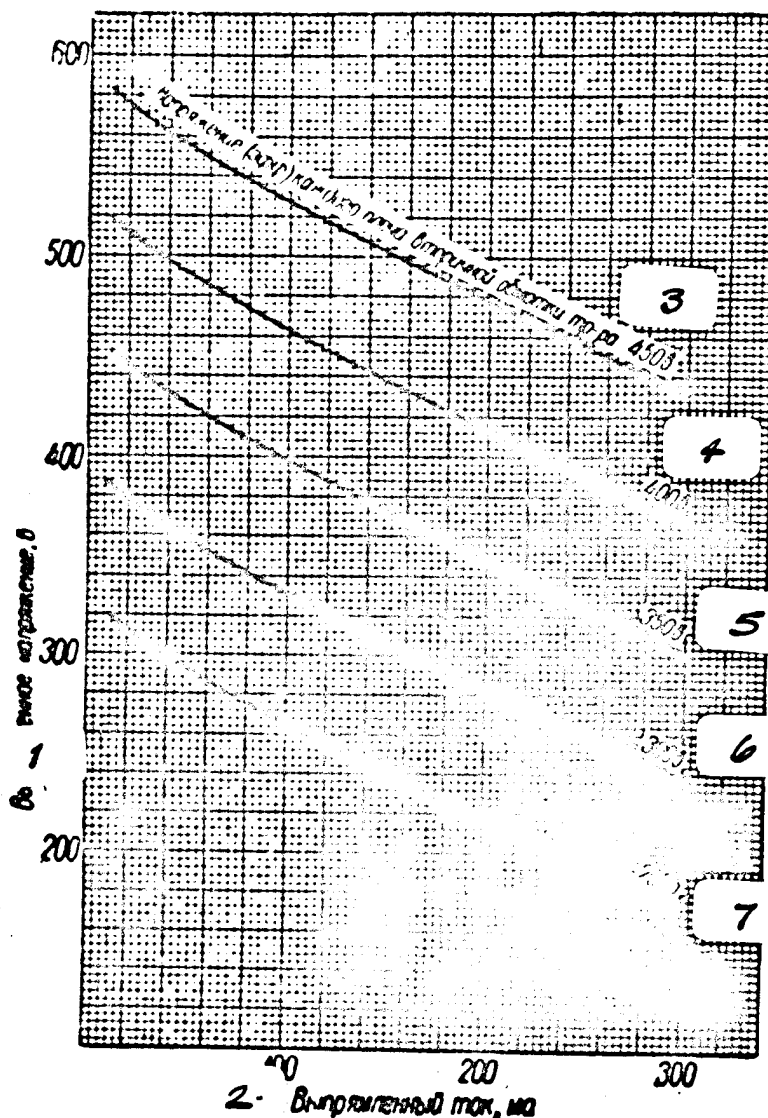
(Above material published April 1959, PKB, G-1)

DUAL-PLATE RECTIFIER

5Ts8S

Average Rectified-Voltage Curves as a Function of Rectified Current

Heater voltage, 5 v; filter capacitance, 4 μ f, Pure resistance in circuit of each plate, 30 ohms.



1) Rectified voltage, v; 2) rectified current, ma; 3) voltage (eff) for each side of transformer secondary, 450 v; 4) 400 v; 5) 350 v; 6) 300 v; 7) 250 v.

(Above material published April 1959, PKB, G-2)

DUAL-PLATE RECTIFIER

5Ts9S

Basic function AC rectification.Construction glass baseless.General Data

Cathode — oxide-coated heater-type

Maximum height

93.5 mm

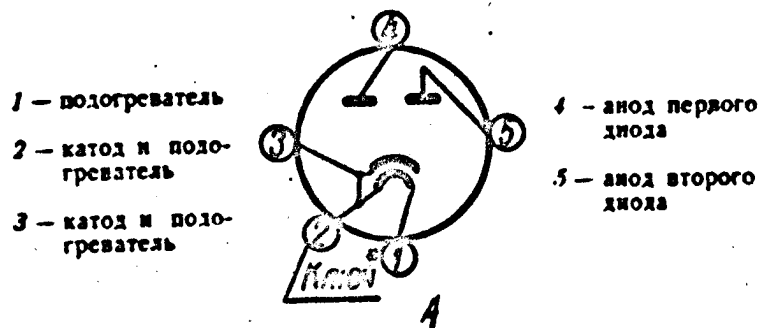
Maximum diameter

45.3 mm

Maximum weight

95 grams

Dimension drawing — 29S

Connection Diagram for Electrodes and Pins

1) Heater; 2) cathode and heater; 3) cathode and heater; 4) plate of first diode; 5) plate of second diode; A) Key.

*The key is formed by a protuberance on the envelope whose extension coincides with the direction of pin 2.

Electrical Data

Heater voltage (~ or =)	5 v
Heater current	3 ± 0.3 amp
Alternating voltage across transformer secondary	2 x 500 v (eff)
Resistance in plate circuit	2200 ohms
Filter capacitance	4 μ f
Heater current	3 ± 0.3 amp
Emission current for each diode*	no less than 180 ma
Rectified current	no less than 190 ma
Insulation resistance for each plate**	no less than 10 megohm
Service life***	500 hours
Service-life criterion:	
rectified current	no less than 150 ma

*For plate voltage of 75 v (=).

**For a heater voltage of 0 v, a plate voltage of 500 v.

***For rectified current of 200 ma.

(Above material published April 1959, PKB, Sheet 1)

DUAL-PLATE RECTIFIER

5Ts9S

Maximum Permissible Operating Data

Maximum heater voltage { ~ or = }	5.5 v
Minimum heater voltage { ~ or = }	4.5 v
Maximum peak plate current	600 ma
Maximum peak inverse plate voltage	1700 v
Maximum average rectified current	205 ma
Maximum average plate-current deviation at instant of turn-on	3.0 amp
Maximum plate power dissipation	12.0 watts
Maximum envelope temperature	200°C

(Above material published April 1959, PKB, Sheet 1)

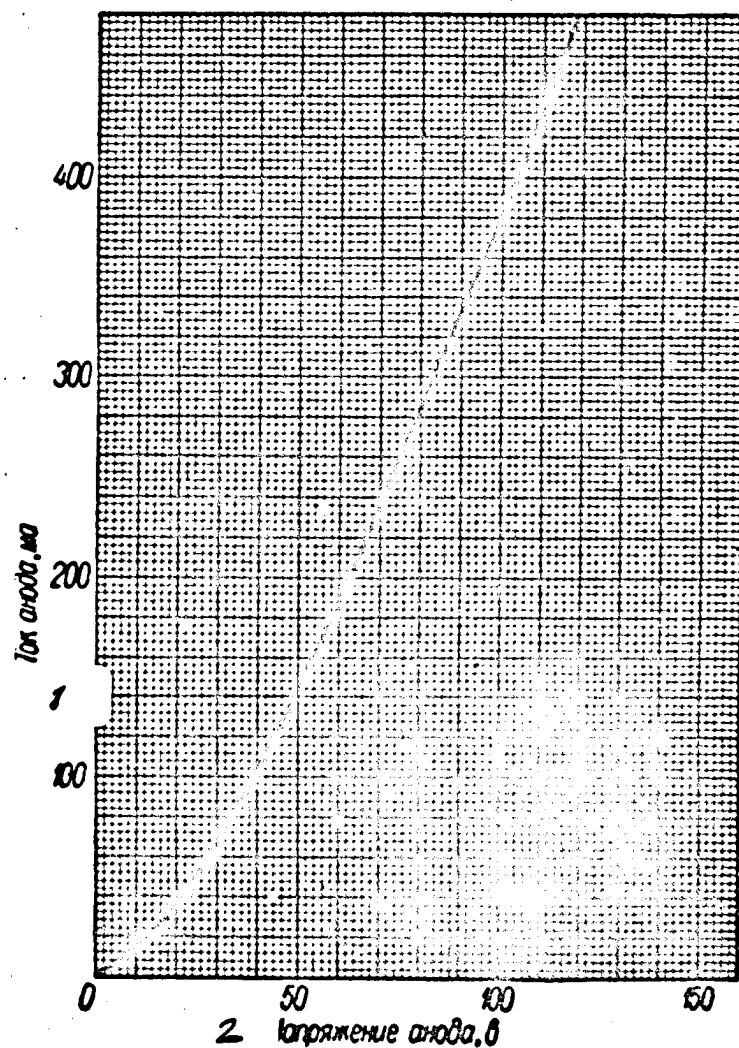
DUAL-PLATE RECTIFIER

5Ts9S

Average Plate Curve

(for a single plate)

Heater voltage, 5 v.



1) Plate current, ma; 2) plate voltage, v.

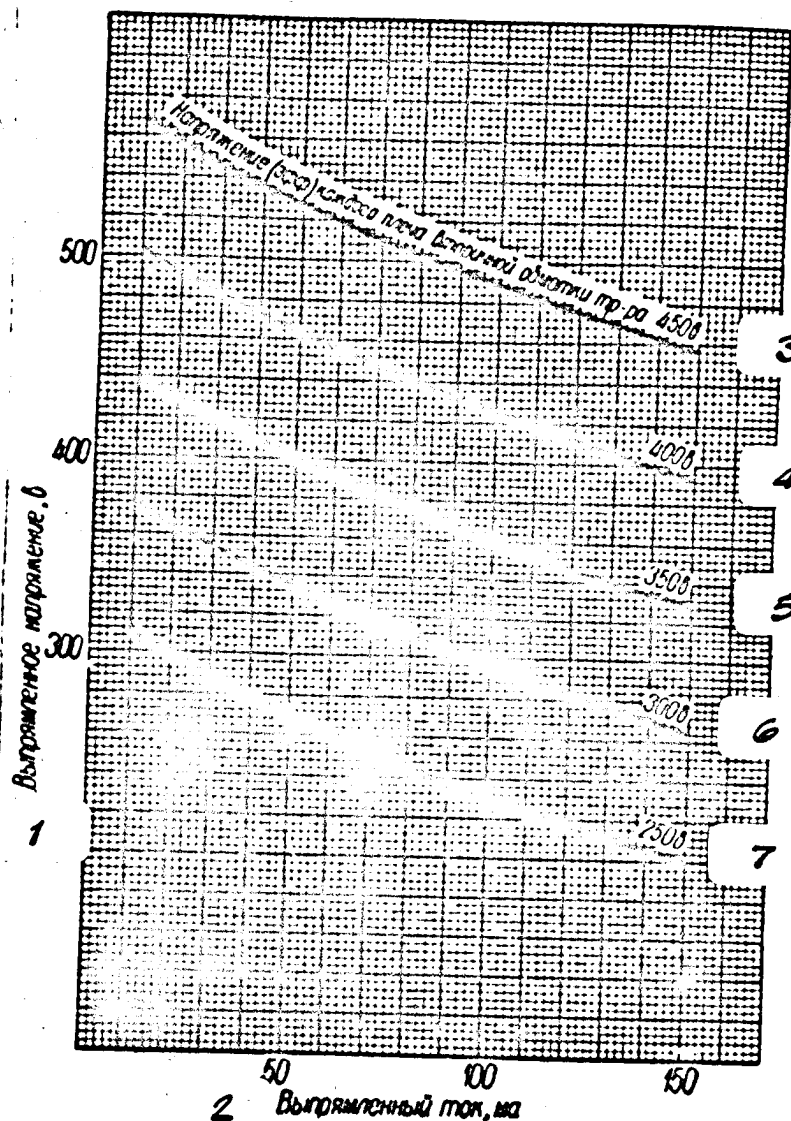
(Above material published April 1959, PKB, G-1)

DUAL-PLATE RECTIFIER

5Ts9S

Average Rectified-Voltage Curves as a Function of Rectified Current

Heater voltage, 5 v; filter capacitance, 4 μ f; total pure resistance in circuit of each plate, 30 ohms.



1) Rectified voltage, v; 2) rectified current, ma; 3) voltage (eff) for each side of transformer secondary, 450 v; 4) 400 v; 5) 350 v; 6) 300 v; 7) 250 v.

(Above material published April 1959, PKB, G-2)

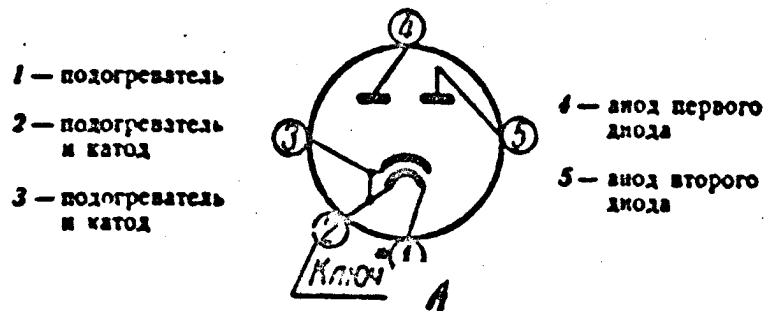
DUAL-PLATE RECTIFIER (LONG-LIFE)

5Ts9S-Ye

Basic function AC rectification.Construction glass baseless.General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Maximum weight
 Dimension drawing — 29S

93.5 mm
 45.3 mm
 95 grams

Connection Diagram for Electrodes and Pins

1) Heater; 2) heater and cathode; 3) heater and cathode; 4) first-diode plate; 5) second-diode plate; A) Key.

*The key is a protuberance on the envelope the extension of which coincides with the direction of pin 2.

Electrical Data

Heater voltage ($\sim$ or $=$)	5 v
Heater current	3 ± 0.3 amp
Alternating voltage across transformer secondary	2 x 500 v (eff)
Resistance in plate circuit	2200 ohms
Filter capacitance	4 μ f
Emission current for each diode*	no less than 190 ma
Rectified current	no less than 190 ma
Service life	5000 hours
Service-life criterion:	
Rectified current	no less than 160 ma

*For plate voltage of 75 v (=).

(Above material published April 1959, PKB, Sheet 1)

DUAL-PLATE RECTIFIER (LONG-LIFE)

5Ts9S-Ye

Maximum Permissible Operating Data

Maximum heater voltage { ~ or = }	5.25 v
Minimum heater voltage { ~ or = }	4.75 v
Maximum peak plate current	600 ma
Maximum peak inverse plate voltage	1700 v
Maximum average rectified current	200 ma
Maximum deviation in plate current at instant of turn-on	3 amp
Maximum plate power dissipation	12 watts
Maximum envelope temperature	200°C

Resistance to External Effects

Atmospheric pressure	41 mm Hg
Vibration resistance*	8 G
Vibration-resistance criterion - absence of short circuits at vibration fre- quency of 50 cps	

*For vibration in the 12-50 cps range.

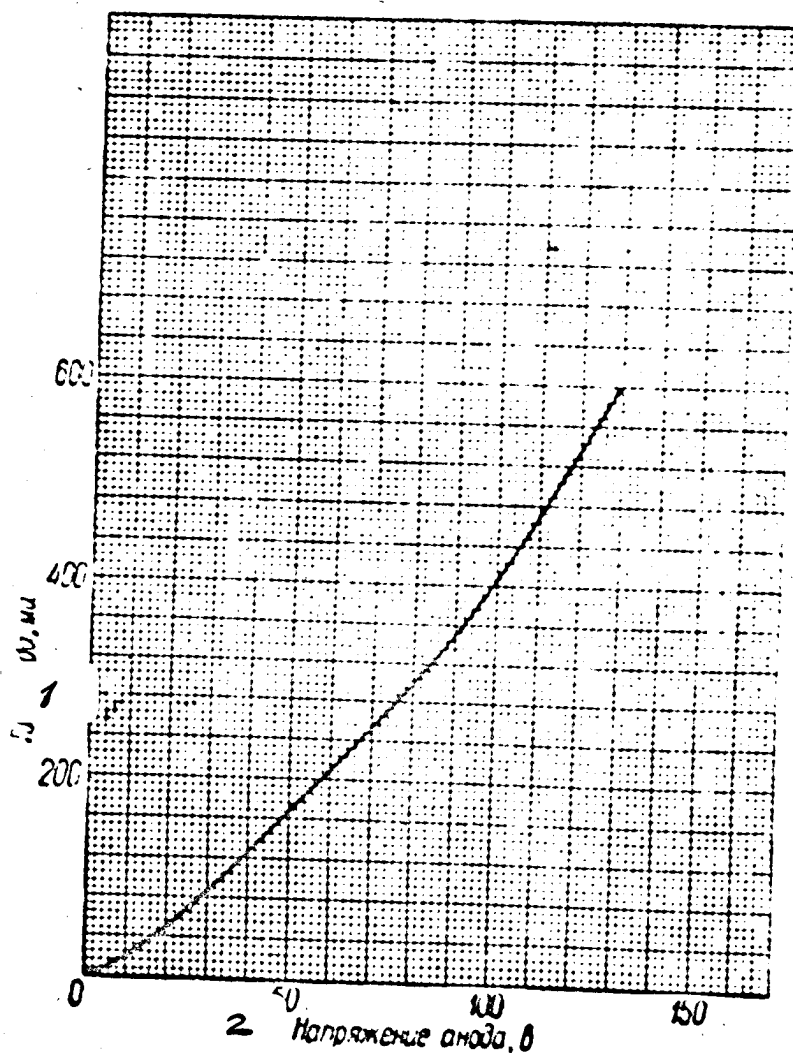
(Above material published April 1959, PKB, Sheet 1)

DUAL-PLATE RECTIFIER (LONG-LIFE)

5Ts9S-Ye

Average Plate Curve

Heater voltage, 5 v.



1) Plate current, ma; 2) plate voltage, v.

(Above material published April 1959, PKB, G-1)

HIGH-VOLTAGE RECTIFIER

5Ts12P

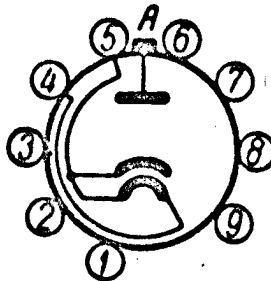
Basic function AC rectification.Construction glass miniature.General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Maximum weight
 Number of pins
 Dimension drawing — 18P

75 mm
 22.5 mm
 25 grams
 9

Connection Diagram for Electrodes and Pins

1 — не подключен
 2 — не подключен
 3 — не подключен
 4 — подогреватель
 5 — катод и подогреватель



6 — не подключен
 7 — не подключен
 8 — не подключен
 9 — не подключен
 A — верхний вывод колпачок — анод

1) Not connected; 2) not connected; 3) not connected; 4) heater;
 5) cathode and heater; 6) not connected; 7) not connected; 8) not connected; 9) not connected; A) Top lead-cap — plate.

Electrical Data

Heater voltage (~ or =)	5 v
Heater current	770 ± 70 ma
Alternating voltage across transformer secondary	2 kv (eff)
Load resistance	40 kohm
Filter capacitance	1 μf
Plate current*	no less than 50 ma
Rectified current	no less than 50 ma
Service life	500 hours
Service-life criterion: rectified current	45 ma

*For plate voltage (=) of 40 v.

(Above material published April 1959, PKB, Sheet 1)

HIGH-VOLTAGE RECTIFIER

5Ts12P

Maximum Permissible Operating Data

Maximum heater voltage { ~ or = }	5.5 v
Minimum heater voltage { ~ or = }	4.5 v
Maximum peak inverse plate voltage	5 kv
Maximum average rectified current	50 ma
Maximum peak plate current	350 ma
Maximum plate power dissipation	5 watts
Maximum deviation in plate current at instant of turn-on	2 amps
Maximum envelope temperature	200°C

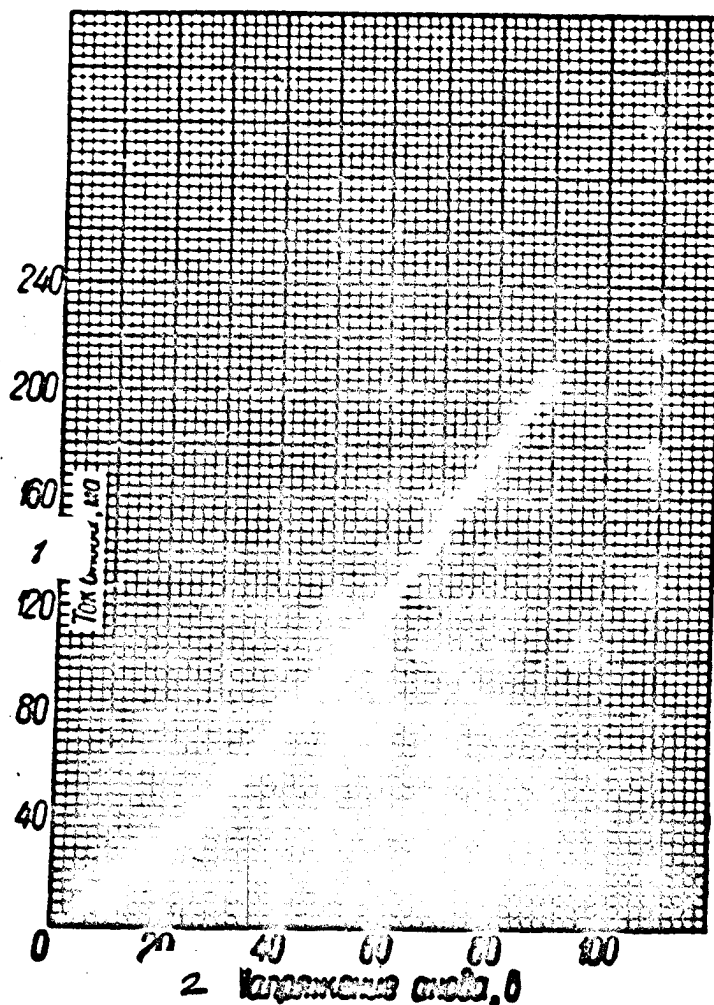
(Above material published April 1959, PKB, Sheet 1)

HIGH-VOLTAGE RECTIFIER

5Ts12P

Average Plate Curve

Heater voltage, 5 v.



1) Plate current, ma; 2) plate voltage, v.

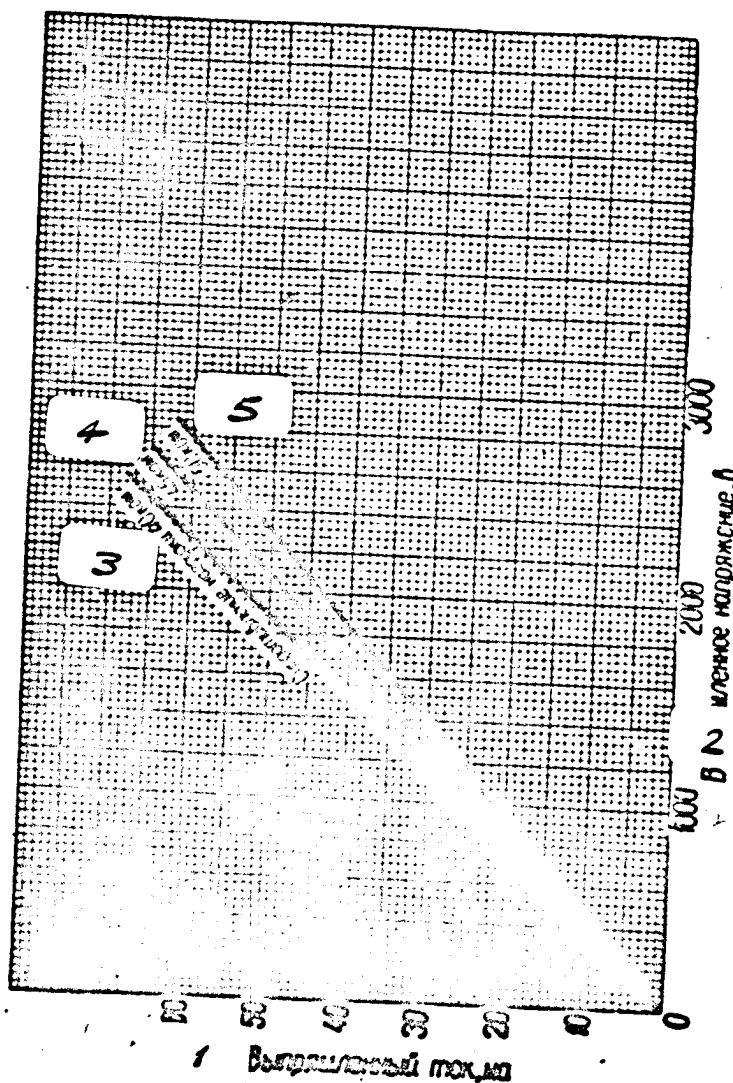
(Above material published April 1959, PKB, G-1)

HIGH-VOLTAGE RECTIFIER

5Ts12P

Average Dynamic Characteristics

Heater voltage, 5 v.



1) Rectified current, ma; 2) rectified voltage, v; 3) load resistance, 40 kohm; 4) 45 kohm; 5) 50 kohm.

(Above material published April 1959, PKB, G-2)

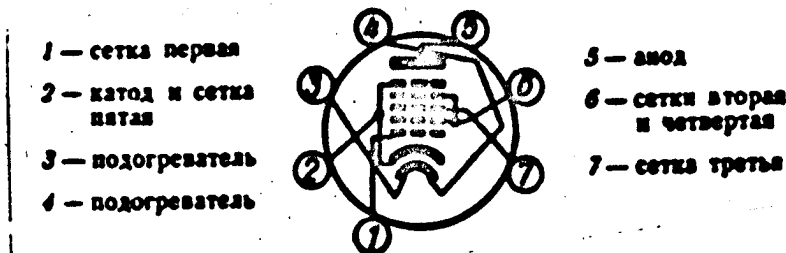
HEPTODE-CONVERTER

6A2P

Basic function frequency conversion.Construction glass miniature.General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Number of pins
 Dimension drawing — 3P

57 mm
 19 mm
 7

Connection Diagram for Electrodes and Pins

- 1) First grid; 2) cathode and fifth grid; 3) heater; 4) heater;
 5) plate; 6) second and fourth grids; 7) third grid.

Electrical Data

Heater voltage (~ or =)	6.3 v	
Filament current	300 ± 25 ma	
Plate voltage (=)	250 v	
Second and fourth grid voltages (=)	100 v	
Third grid voltage (=)	-1.5 v	
Plate current	3 ± 1 ma	
Second and fourth grid currents*	7 ± 2.1 ma	
First-grid current	no more than 0.5 ma	←
Conversion transconductance*,**	no less than 0.3 ma/v	
Conversion transconductance for third-grid voltage of -35 v	from 0.5 to 25 μ a/v	
Heterodyne transconductance***	no less than 4.5 ma/v	
Internal resistance	0.8 kohm	←
Third-grid back current	no more than 2 μ a	
Leakage current between cathode and heater	no more than 20 μ a	
Cathode emission current	no less than 60 ma	
Service life	500 hours	
Service-life criterion:		
Heterodyne transconductance***	no less than 3.6 ma/v	

*For an alternating first-grid voltage corresponding to a current of 0.8 ma in the grid circuit, and 20 kohm resistance in the grid circuit.

**With an alternating third-grid voltage of 0.7 v (eff).

***For a plate voltage of 100 v.

← Change and addition introduced.

(Above material published April 1959, PKB, Sheet 1)

HEPTODE-CONVERTER

6A2P

Interelectrode Capacitances

Input, first grid	3.6 μf
Input, third grid	8 μf
Output	10.5 μf
Plate-third grid	0.35 μf

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	6.9 v
Minimum heater voltage ($\sim$ or $=$)	5.7 v
Maximum plate voltage ($=$)	330 v
Maximum second and fourth grid voltage ($=$)	110 v
Maximum negative third-grid voltage	-50 v
Maximum plate power dissipation	1.1 watts
Maximum second and fourth grid power dissipation	1.1 watts
Maximum cathode current	14 ma
Maximum voltage between cathode and heater ($=$)	100 v

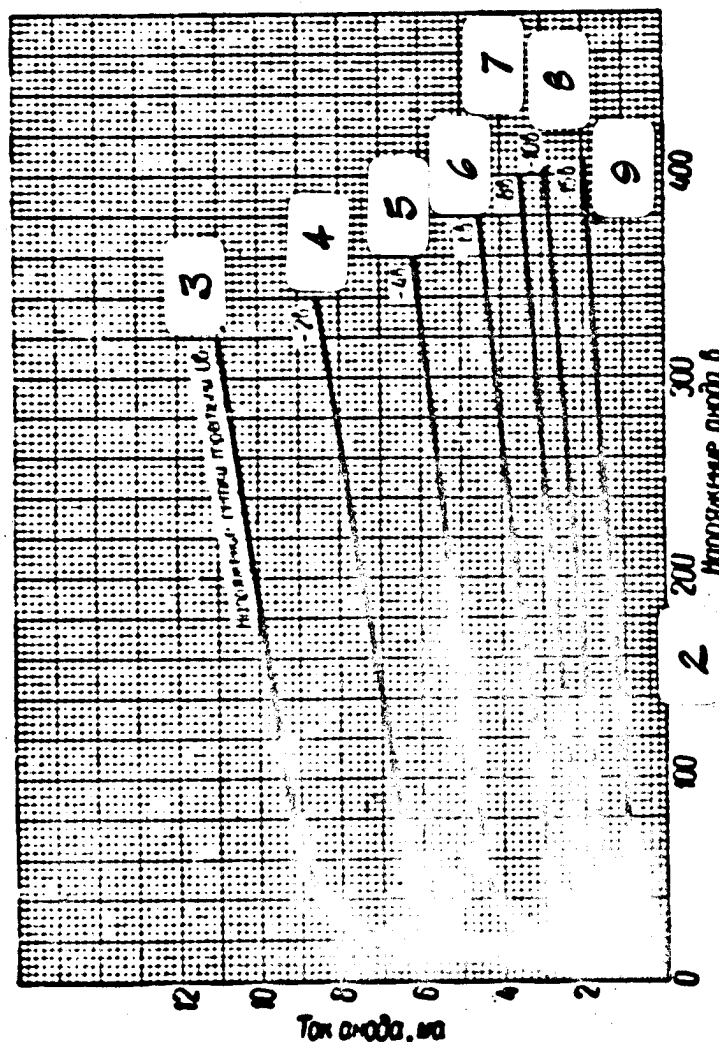
← Change and addition introduced.
 (Above material published April 1959, PKB, Sheet 1)

HEPTODE-CONVERTER

6A2P

Average Plate Characteristics

Heater voltage, 6.3 v; second-grid voltage, 100 v; first-grid voltage, 0 v.



- 1) Plate current, ma; 2) plate voltage, v; 3) third-grid voltage, 0 v;
 4) -2 v; 5) -4 v; 6) -6 v; 7) -8 v; 8) -10 v; 9) -15 v.

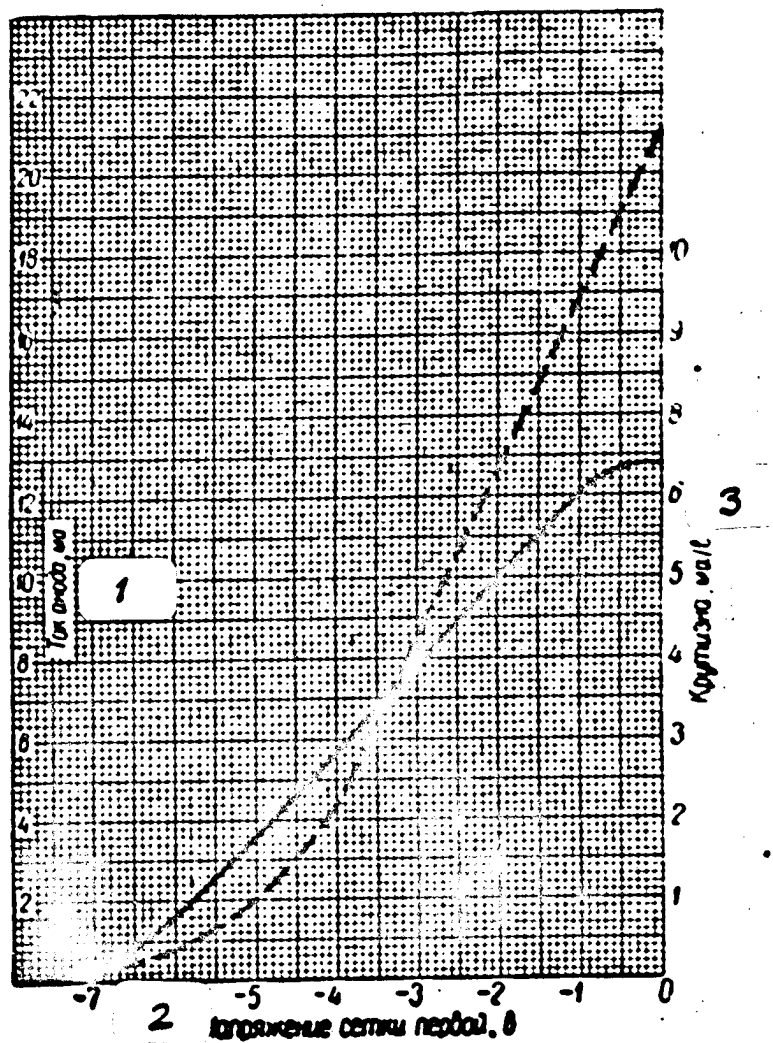
(Above material published April 1959, PKB, G-1)

HEPTODE-CONVERTER

6A2P

Average Heterodyne Characteristics

———— Mutual conductance; ----- Plate-grid; heater voltage, 6.3 v;
plate, second-grid, fourth-grid voltage, 100 v; third-grid voltage,
0 v.



1) Plate current, ma; 2) first-grid voltage, v; 3) mutual conductance, ma/v.

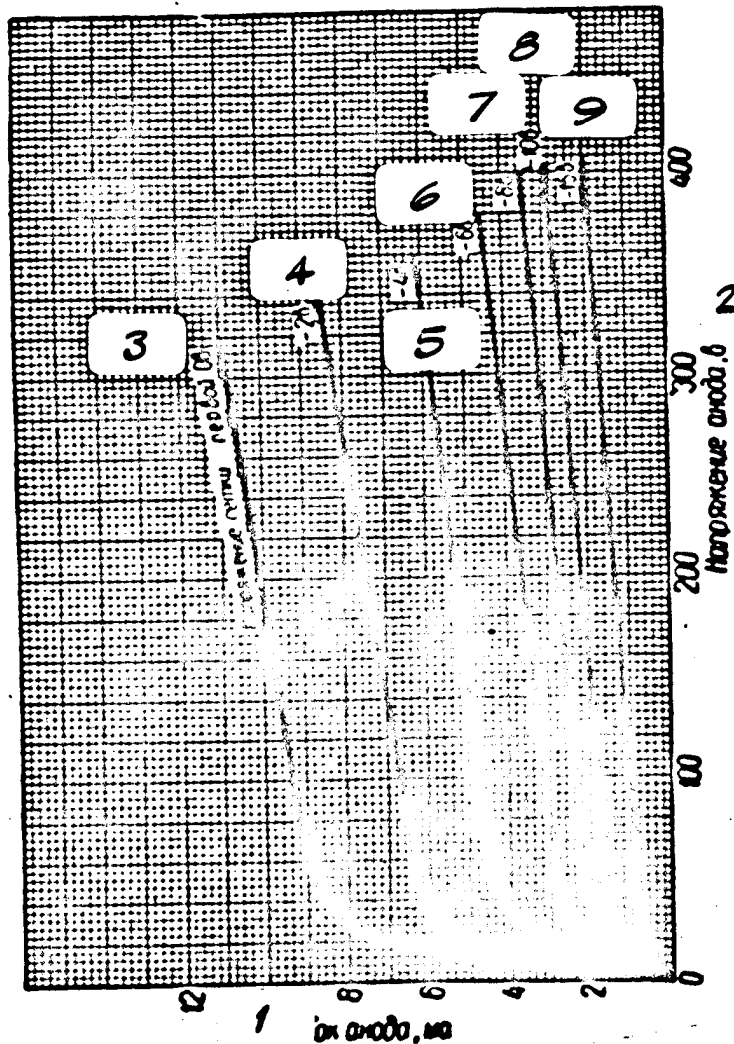
(Above material published April 1959, PKB, G-3)

HEPTODE-CONVERTER

6A2P

AVERAGE PLATE CURVES

Heater voltage, 6.3; screen voltage, 100 v; suppressor voltage, 0 v.



1) Plate current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -2 v; 5) -4 v; 6) -6 v; 7) -8 v; 8) -10 v; 9) -15 v.

(Above material published April 1959, PKB, G-2).

DUAL-CONTROL BEAM-POWER TUBE

6A3P

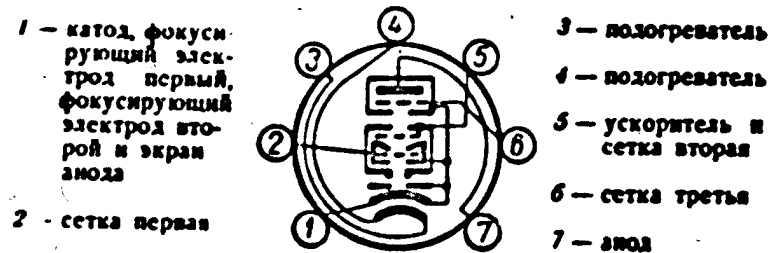
Basic function applications in amplitude limiters, detectors for frequency and phase-modulated signals, and in coincidence circuits.

Construction glass miniature.

General Data

Cathode — oxide-coated heater-type
Maximum height
Maximum diameter
Maximum weight
Number of pins
Dimension drawing — 9P

70 mm
19 mm
17 grams
7

Connection Diagram for Electrodes and Pins

1) Cathode, first focusing electrode, second focusing electrode, plate shield; 2) first grid; 3) heater; 4) heater; 5) accelerator and second grid; 6) third grid; 7) plate.

Electrical Data

Heater voltage (~ or =) 6.3 v
Heater current 300 ± 25 ma
Plate voltage (=) 75 v
Accelerator voltage and second-grid voltage (=) 75 v
Plate current* no less than 3.5 ma
Accelerator current* 7 ma

*For first and third grid voltage of +4 v.

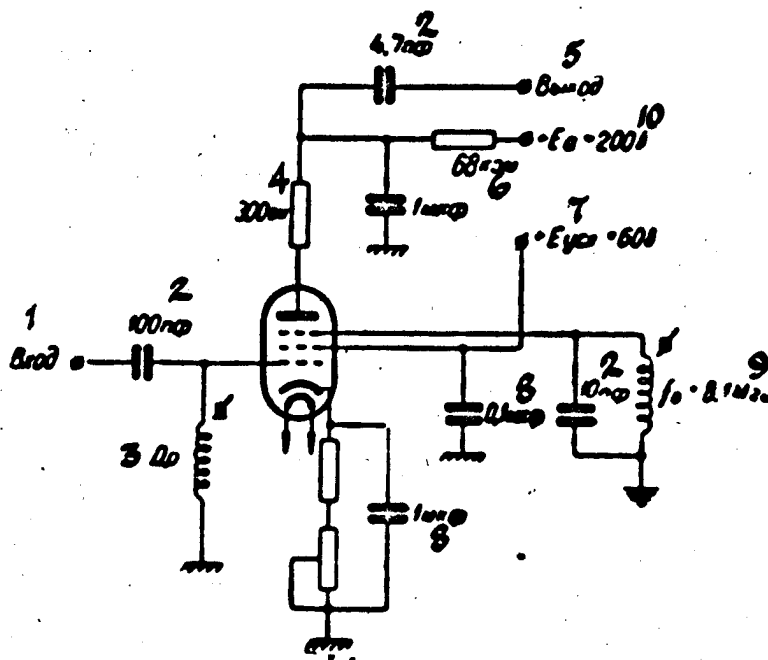
(Above material published April 1959, PKB, Sheet 1)

DUAL-CONTROL BEAM-POWER TUBE

6A3P

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	7 v
Minimum heater voltage ($\sim$ or $=$)	5.7 v
Maximum plate voltage ($=$)	150 v
Maximum accelerator voltage ($=$)	100 v
Maximum plate power dissipation	1.2 watts
Maximum accelerator dissipation	1.5 watts
Maximum voltage between cathode and heater ($=$)	100 v
Maximum cathode current	20 ma

Typical Operating Conditions in
FM Detector Circuit

1) Input; 2) μf ; 3) choke; 4) ohms; 5) output; 6) kohms; 7) $+E_{us} - 60 \text{ v}$;
8) μf ; 9) Mc; 10) volts.

Plate power-supply voltage ($=$)	200 v
Accelerator supply voltage ($=$)	60 v
Signal amplitude at input	2 v
Signal amplitude at output	no more than 50 v
Slope of detection curve	450 mv/Mc
Initial plate current	no more than 0.5 ma

(Above material published April 1959, PKB, Sheet 2)

DUAL-CONTROL BEAM-POWER TUBE

6A3P

First-grid mean mutual conductance*	no less than 1.2 ma/v
Mean third-grid mutual conductance*	no less than 0.95 ma/v
Mean first-grid mutual conductance-for heater voltage of 5.7 v*	no less than 1.1 ma/v
First-grid current**	500 μ a
Third-grid current**	300 μ a
Negative first-grid voltage for plate current of 100 μ a***	2.75 $\pm$ 0.75 v
Negative third-grid voltage for plate current of -100 μ a****	3 $\pm$ 0.75 v
Negative first-grid voltage corresponding to plate half-current***	1.65 $\pm$ 0.65 v
Negative third-grid current-corresponding to plate half-current****	0.75 $\pm$ 0.75 v [sic]
First-grid back current*****	no more than 0.5 μ a
Cathode-heater leakage current*****	no more than 30 μ a
Service life	500 hours
Service-life criteria:	
Plate current variation from initial value	no more than 12%

*The mean mutual conductance is determined in accordance with the formula

$$S_{av} = 0.8I_a / (U_{s0.9} - U_{s0.1}),$$

where I_a is the plate current for first and third grid voltages of 4 v; $U_{s0.9}$ and $U_{s0.1}$ are the first and third grid voltages at which the plate current equals 0.9 and 0.1 amp respectively.

**For first and third grid voltages of 10 v.

***For third-grid voltage of 4 v.

****For first-grid voltage of 4 v.

*****For first-grid voltage of -10 v.

*****For voltage between heater and cathode of $\pm$ 250 v.

Interelectrode Capacitances

Input, first grid	no more than 5.2 μ mf
Input, third grid	no more than 2 μ mf
Output, first grid	4 μ mf
Output, third grid	2.2 μ mf
First grid-plate	no more than 0.007 μ mf
Third grid-plate	no more than 2 μ mf
First grid-third grid	no more than 0.007 μ mf

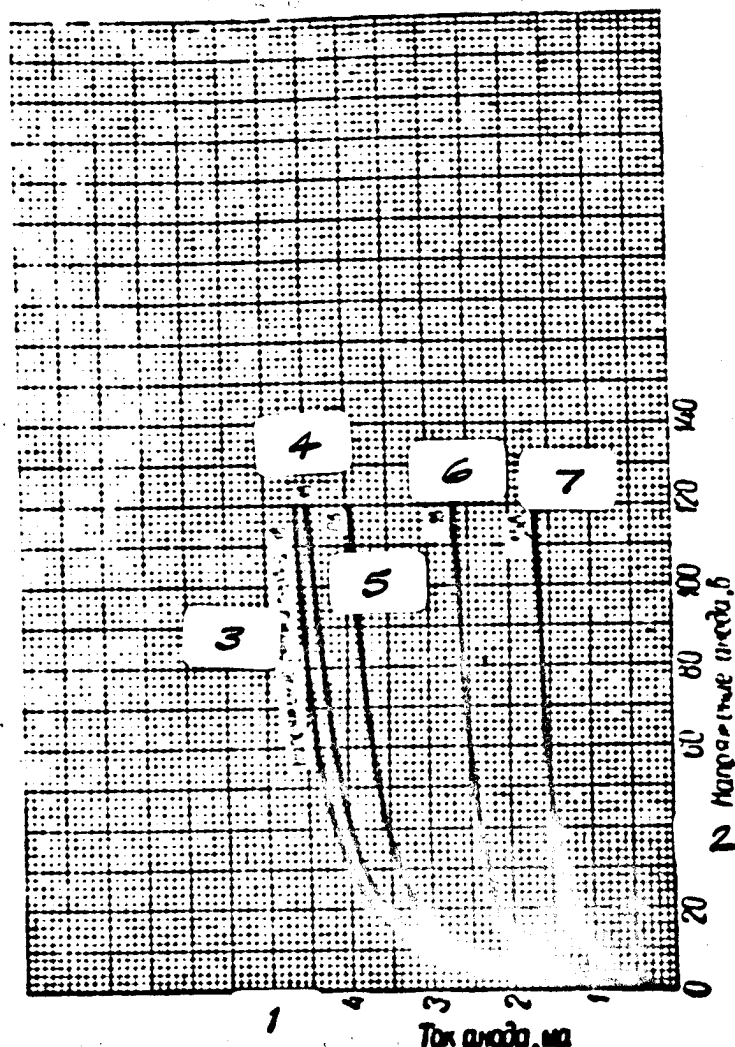
(Above material published April 1959, PKB, Sheet 1)

DUAL-CONTROL BEAM-POWER TUBE

6A3P

Mean Plate Characteristics

Heater voltage, 6.3 v; third-grid voltage, 4 v; accelerator voltage, 75 v.



1) Plate current, ma; 2) plate voltage, v; 3) first-grid voltage, 3 v; 4) 1 v; 5) 0 v; 6) -1 v; 7) -1.5 v.

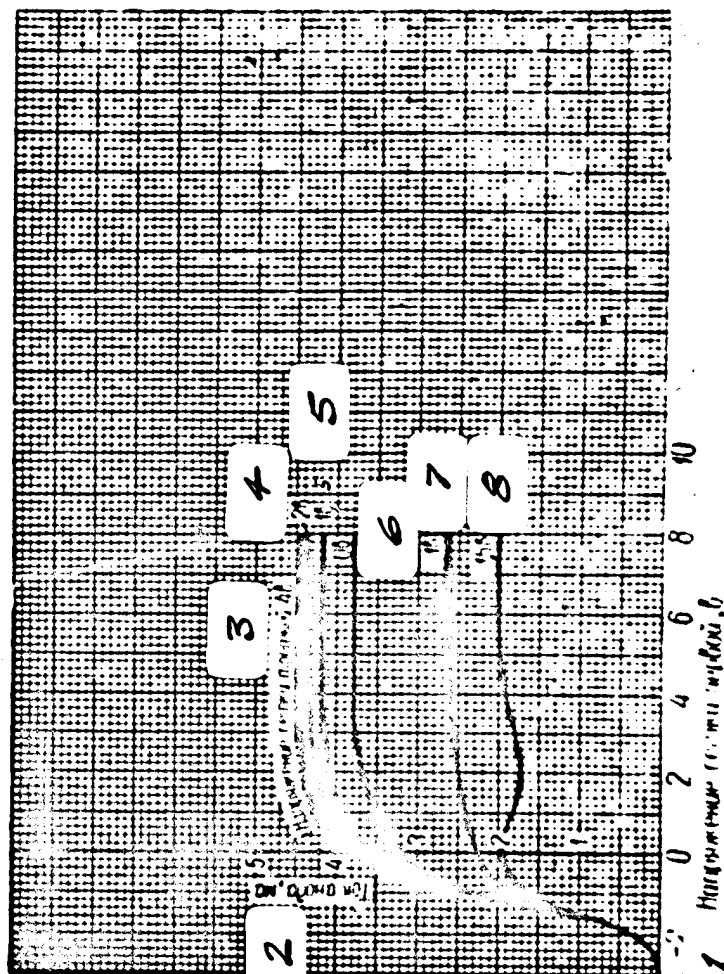
(Above material published April 1959, PKB, G-1)

DUAL-CONTROL BEAM-POWER TUBE

6A3P

Average Plate-Grid Characteristics

Heater voltage, 6.3 v; plate voltage, 75 v. accelerator voltage, 75 v.



1) First-grid voltage, v; 2) plate current, ma; 3) third-grid voltage, 4 v; 4) 2 v; 5) 1 v; 6) 0 v; 7) -1 v; 8) -1.5 v.

(Above material published April 1959, PKB, G-3)

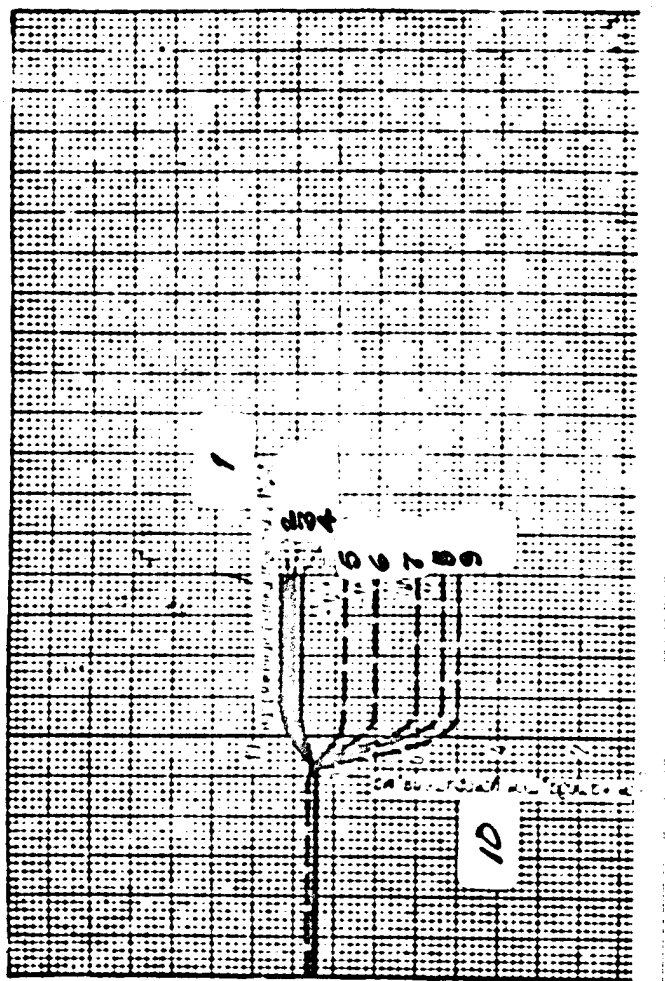
DUAL-CONTROL BEAM-POWER TUBE

6A3P

Average Characteristics

(as a function of first-grid voltage)

———— Cathode current; ----- Accelerator current; heater voltage, 6.3 v; plate voltage, 75 v; accelerator voltage, 75 v.



1) Third-grid voltage, 1 v, 3 v; 2) 0 v; 3) -1 v; 4) -1.5 v; 5) -1.5 v;
6) -1 v; 7) 0 v; 8) 1 v; 9) 3 v; 10) cathode current, accelerator
current, ma.

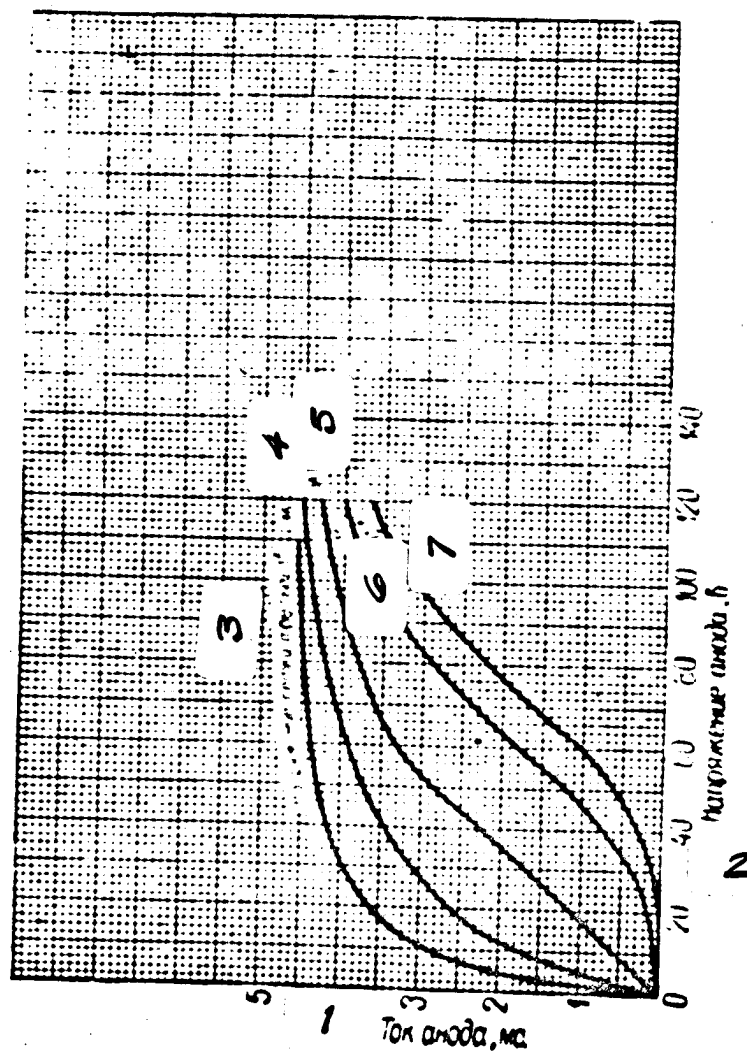
(Above material published April 1959, PKB, ?)

DUAL-CONTROL BEAM-POWER TUBE

6A3P

Average Plate Characteristics

Heater voltage, 6.3 v; first-grid voltage, 4 v; accelerator voltage, 75 v.



1) Plate current, ma; 2) plate voltage, v; 3) third-grid voltage, 3 v; 4) 1 v; 5) 0 v; 6) -1 v; 7) -1.5 v.

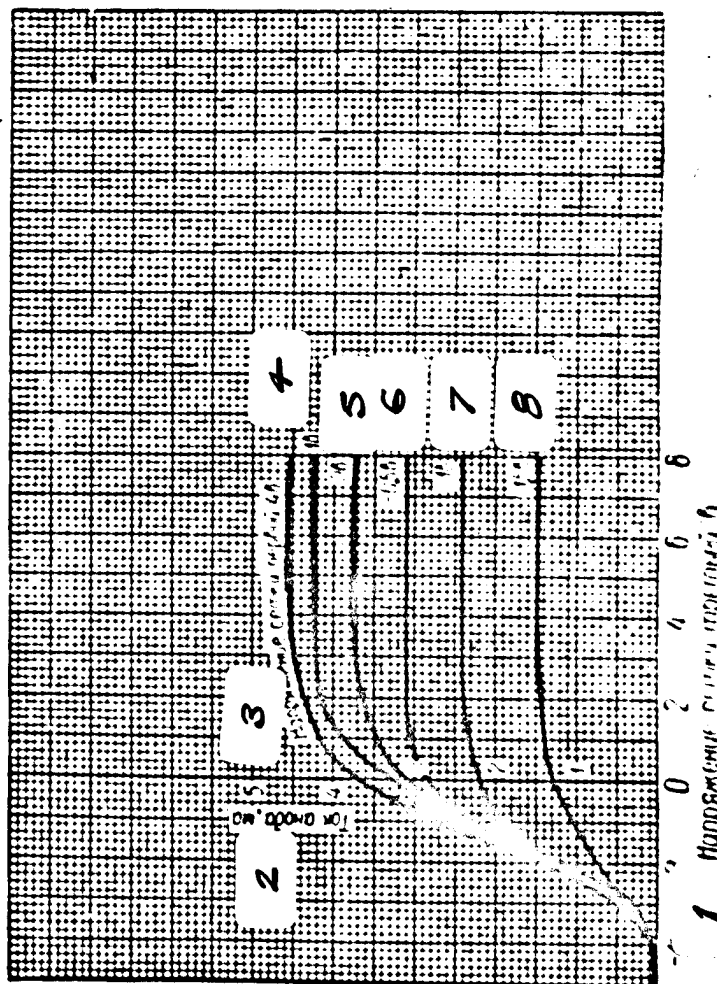
(Above material published April 1959, PKB, G-2)

DUAL-CONTROL BEAM-POWER TUBE

6A3P

Average Plate-Grid Characteristics

Heater voltage, 6.3 v; plate voltage, 75 v; accelerator voltage, 75 v.



1) Third-grid voltage, v; 2) plate current, ma; 3) first-grid voltage, 4 v; 4) 1 v; 5) 0 v; 6) -0.5 v; 7) -1 v; 8) -1.5 v.

(Above material published April 1959, PKB, G-4)

-363-

HEPTODE CONVERTER

6A7

Basic function frequency conversion.Construction metal.General Data

Cathode — oxide-coated heater-type

Maximum height

67 mm

Maximum diameter

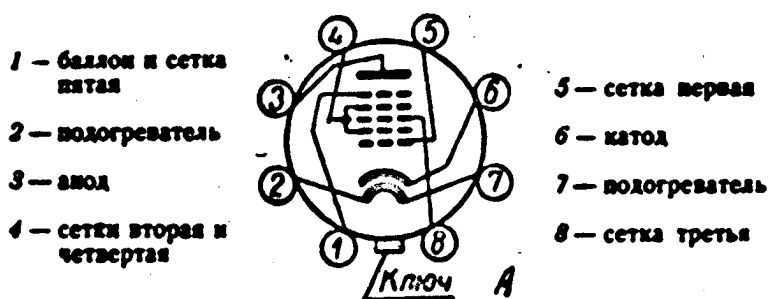
33 mm

Base — octal, Tsl-1-8A

Maximum weight

45 grams

Dimension drawing — 1M

Connection Diagram for Electrodes and Pins

1) Envelope and fifth grid; 2) heater; 3) plate; 4) second and fourth grid; 5) first grid; 6) cathode; 7) heater; 8) third grid; A) Key.

Electrical Data

Heater voltage ($\sim$ or $=$)	6.3 v
Heater current	300 ± 25 ma
Plate voltage ($=$)	250 v
Second and fourth grid voltages ($=$)	100 v
Third grid voltage ($=$)	0 v
Fifth grid voltage ($=$)	0 v
Plate current*	3.5 ± 1 ma
Second and fourth grid currents*	9 ± 2.5 ma
First grid current*	0.51 ± 0.13 ma
Conversion transconductance*	0.45 ± 0.15 ma/v
Conversion transconductance for third-grid voltage of -35 v*	from 0.5 to 2.5 μ a/v
Heterodyne transconductance*	4.7 ± 1.2 ma/v
Heterodyne transconductance for heater voltage of 5.7 v*	no less than 2.8 ma/v

*Under dynamic conditions. The oscillator section of the tube operates in a Hartley circuit with a first-grid circuit resistance of 20 kohm; the alternating voltage on the third grid is 0.7 v (eff).

**For a plate voltage of 100 v and a first-grid voltage of 0 v.

--

(Above material published April 1959, PKB, Sheet 1)

HEPTODE CONVERTER

6A7

Third-grid back current*	no more than 2.0 μ a
First-grid thermionic-emission current*	no more than 5.0 μ a
Cathode emission current	no less than 70 ma
Leakage current between cathode and heater	no more than 20 μ a
Plate insulation resistance	no less than 20 megohm
Third-grid insulation resistance	no less than 20 megohm
Service life	1000 hours
Service-life criteria:	
Conversion transconductance***	no less than 0.23 ma/v
First-grid current	no less than 0.33 ma

*For third-grid voltage of -2 v and resistance in the third-grid circuit of 0.1 megohm.

**For first and third grid voltages of -3.4 v.

***Under dynamic conditions. The oscillator section of the tube operates in a Hartley circuit with a first-grid circuit resistance of 20 kohm; the alternating voltage on the third grid is 0.7 v (eff).

Interelectrode Capacitances

Input	9.5 $\pm$ 1.9 μ mf
Output	12 $\pm$ 3.6 μ mf
Transfer	no more than 0.13 μ mf

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or =)	6.9 v
Minimum heater voltage ($\sim$ or =)	5.7 v
Maximum plate voltage (=)	330 v
Maximum second and fourth grid voltages (=)	110 v
Maximum plate power dissipation	1.1 watts
Maximum second and fourth grid power dissipations	1.1 watts
Maximum first-grid current	0.5 ma
Maximum cathode current	15.5 ma
Maximum voltage between cathode and heater (=)	100 v

Standard Operating Conditions

	No. 1	No. 2
Plate voltage (=)	100 v	250 v
Second and fourth grid voltages (=)	100 v	100 v
Third grid voltage (=)	0 v	0 v
Plate current	3.3 ma	3.5 ma
Second and fourth grid currents	8.5 ma	8.5 ma
Conversion transconductance	0.425 ma/v	0.450 ma/v
Conversion transconductance for third-grid current of -35 v	0.002 ma/v	0.002 ma/v
Internal resistance	0.5 megohm	1 megohm
First-grid resistance	20 kohm	20 kohm

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

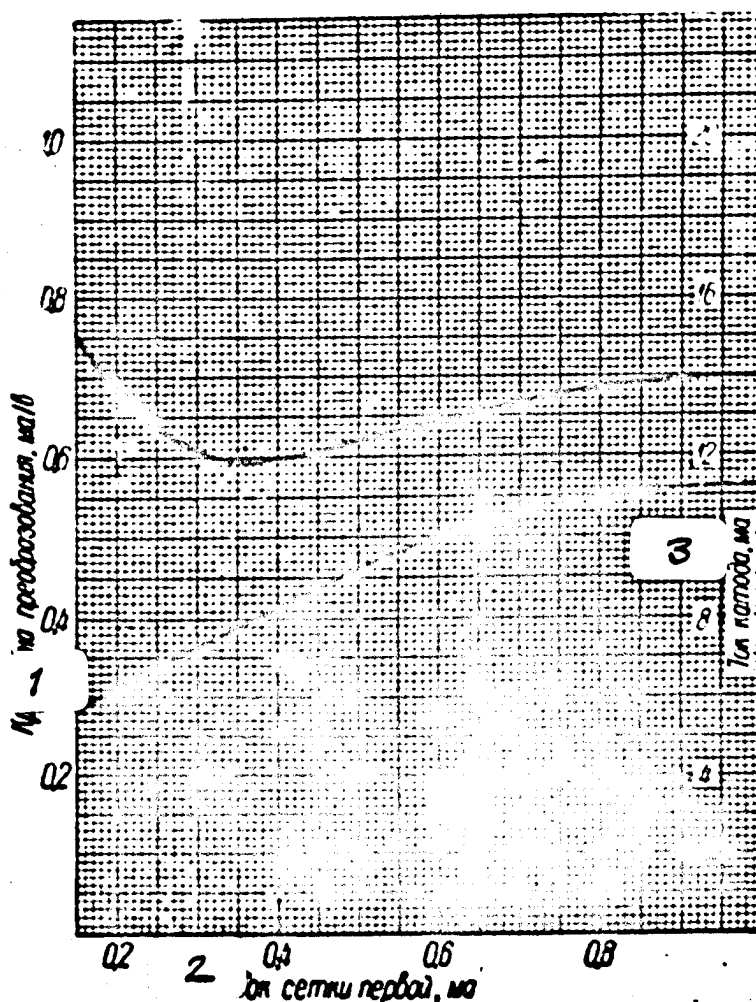
HEPTODE CONVERTER

6A7

Average Characteristics

(as a function of first-grid current)

———— Cathode current; ----- Conversion transconductance; heater voltage, 6.3 v; plate voltage, 250 v; third-grid voltage, -2 v; second and fourth grid voltages, 100 v; resistance in first-grid circuit, 20 kohm.



- 1) Conversion transconductance, ma/v; 2) first-grid current, ma;
3) cathode current, ma.

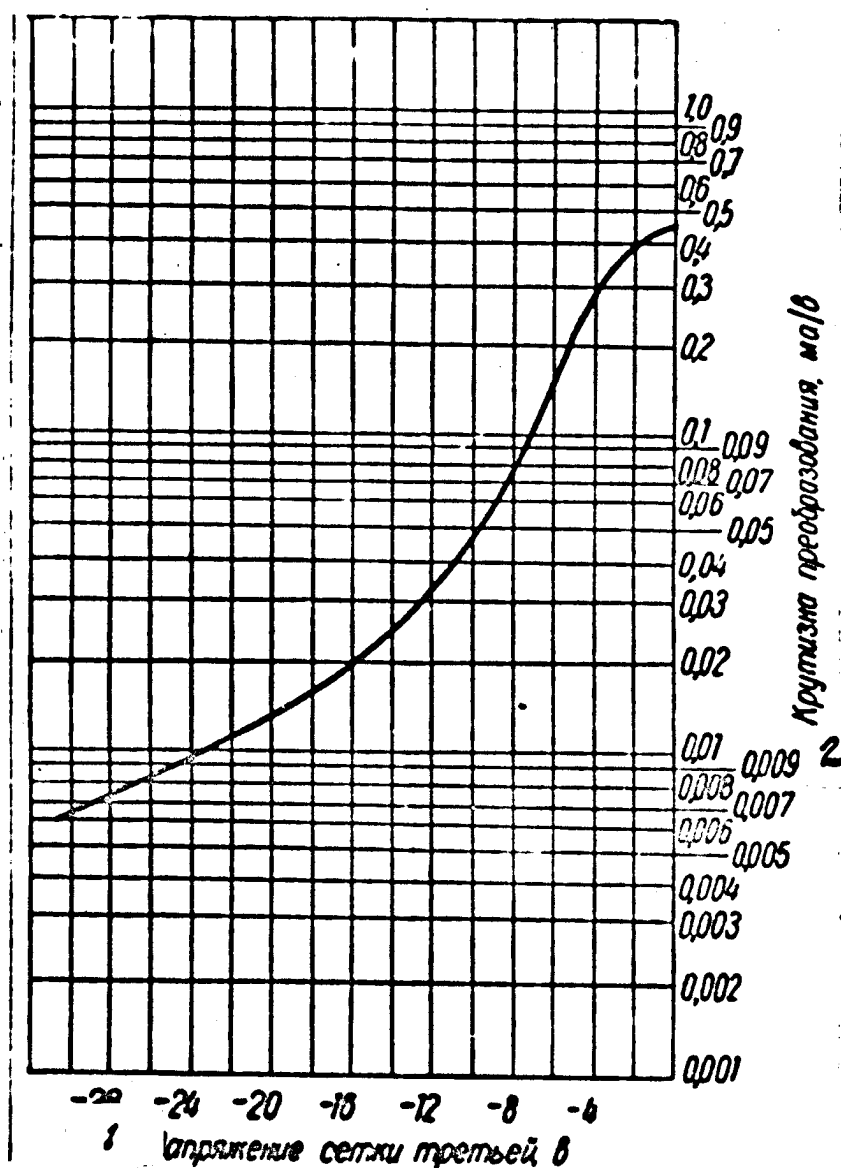
(Above material published April 1959, PKB, G-1)

HEPTODE CONVERTER

6A7

Average Conversion Characteristics

Heater voltage, 6.3 v; plate voltage, 250 v; second and fourth grid voltages, 100 v; first-grid current, 0.5 ma; resistance in first-grid circuit, 20 kohm.



1) Third-grid voltage, v; 2) conversion transconductance, ma/v.

(Above material published April 1959, PKB, G-2)

HEPTODE CONVERTER

6A10S

Basic Function frequency conversion.Construction glass.General Data

Cathode — oxide-coated heater-type

Maximum height

85 mm

Maximum diameter

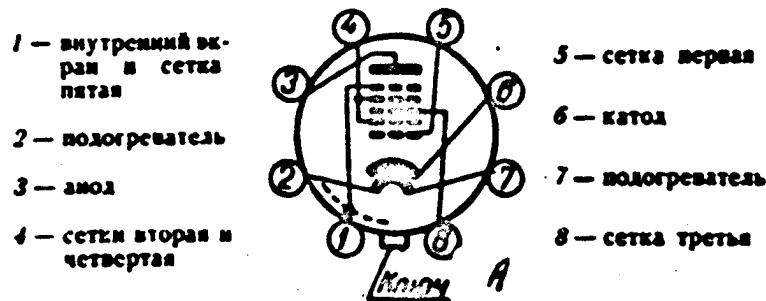
33 mm

Base — octal, Tsl-1-8A

Maximum weight

45 grams

Dimension drawing — 12 S

Connection Diagram for Electrodes and Pins

1) Internal shield and fifth grid; 2) heater; 3) plate; 4) second and fourth grid; 5) first grid; 6) cathode; 7) heater; 8) third grid; A) Key.

Electrical Data

Heater voltage (~ or =)

6.3 v

Heater current

300 ± 25 ma

Plate voltage (=)

250 v

Second and fourth grid voltages (=)

100 v

Third grid voltage {=}

0 v

Fifth grid voltage (=)

0 v

Plate current*

3.5 ± 1 ma

Second and fourth grid currents

9 ± 2.5 ma

First grid current*

0.51 ± 0.13 ma

Conversion transconductance*

450 ± 150 μa/v

Conversion transconductance with third grid voltage of -35 v*

from 0.5 to 25 μa/v

*Under dynamic conditions. oscillator portion of tube operates in Hartley circuit with first-grid-circuit resistance of 20 kohm, alternating third-grid voltage of 0.7 v (eff).

(Above material published April 1959, PKB, Sheet 1)

HEPTODE CONVERTER

6A10S

Heterodyne mutual conductance*	4.7 ± 1.2 ma/v
Heterodyne mutual conductance for heater voltage of 5.7 v*	no less than 3.2 ma/v
Internal resistance*	no less than 0.3 megohm
Third-grid back current**	no more than 2 µa
First-grid thermionic emission current***	no more than 5 µa
Cathode emission current	no less than 70 ma
Leakage current between cathode and heater	no more than 20 µa
Plate insulation resistance	no less than 20 megohm
Third-grid insulation resistance	no less than 20 megohm
Service life	500 hours
Service-life criteria:	
conversion transconductance****	no less than 230 µa/v
first-grid current*	no less than 0.33 ma

*For plate voltage of 100 v and first-grid voltage of 0 v.

**For third-grid voltage of -2 v and third-grid-circuit resistance of < 0.1 megohm.

***For first grid and third grid voltage of -3.4 v.

****Under dynamic conditions. Oscillator section of tube operates in-Hartley circuit with first-grid circuit resistance of 20 kohm, alternating third-grid voltage of 0.7 v (eff).

Interelectrode Capacitances

Input	9 ± 2 µµf
Output	10 ± 3 µµf
Transfer	no more than 0.13 µµf

Maximum Permissible Operating Data

Maximum heater voltage (~ or =)	6.9 v
Minimum heater voltage (~ or =)	5.7 v
Maximum plate voltage (=)	330 v
Maximum second and fourth grid voltage (=)	110 v
Maximum plate power dissipation	1.1 watts
Maximum second and fourth grid power dissipations	• 1.1 watts
Maximum first-grid current	0.5 ma
Maximum cathode current	15.5 ma
Maximum voltage between cathode and heater (=)	100 v

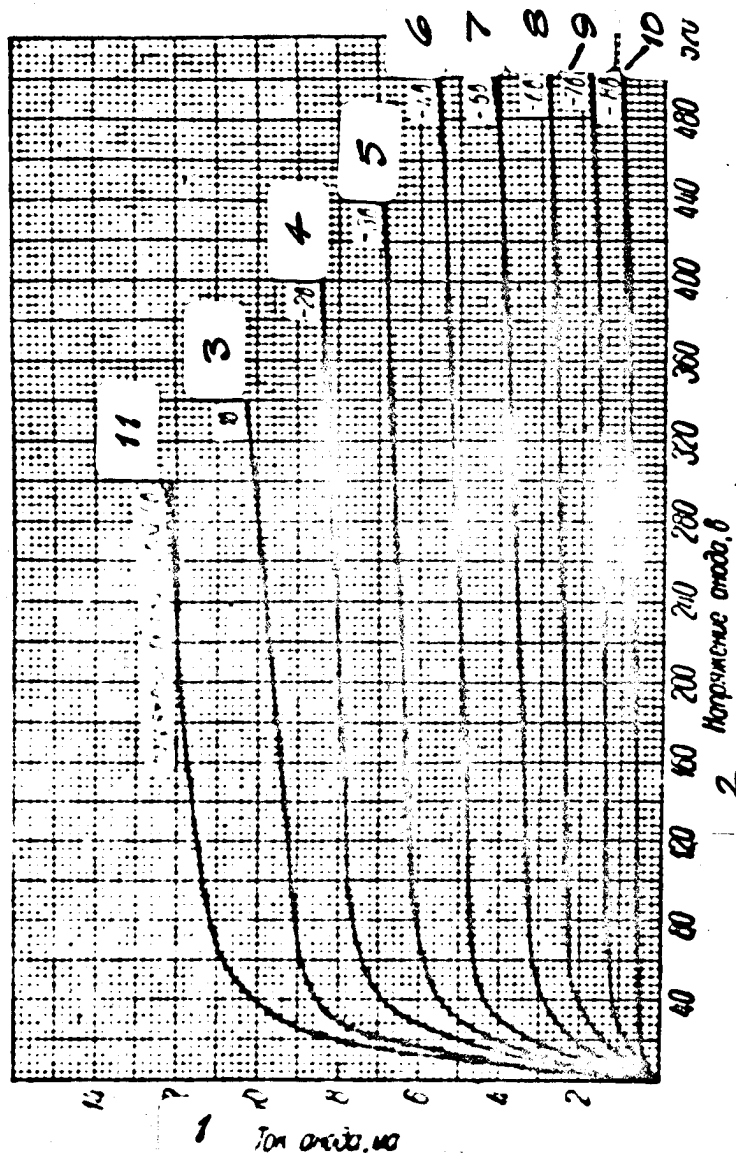
(Above material published April 1959, PKB, Sheet 1)

HEPTODE CONVERTER

6A10S

Average Plate Characteristics

Heater voltage, 6.3 v; second-grid voltage, 100 v; third-grid voltage, 0 v.



1) Plate current, ma; 2) plate voltage, v; 3) -1 v; 4) -2 v; 5) -3 v; 6) -4 v; 7) -5 v; 8) -6 v; 9) -7 v; 10) -8 v; 11) first-grid voltage, 0 v.

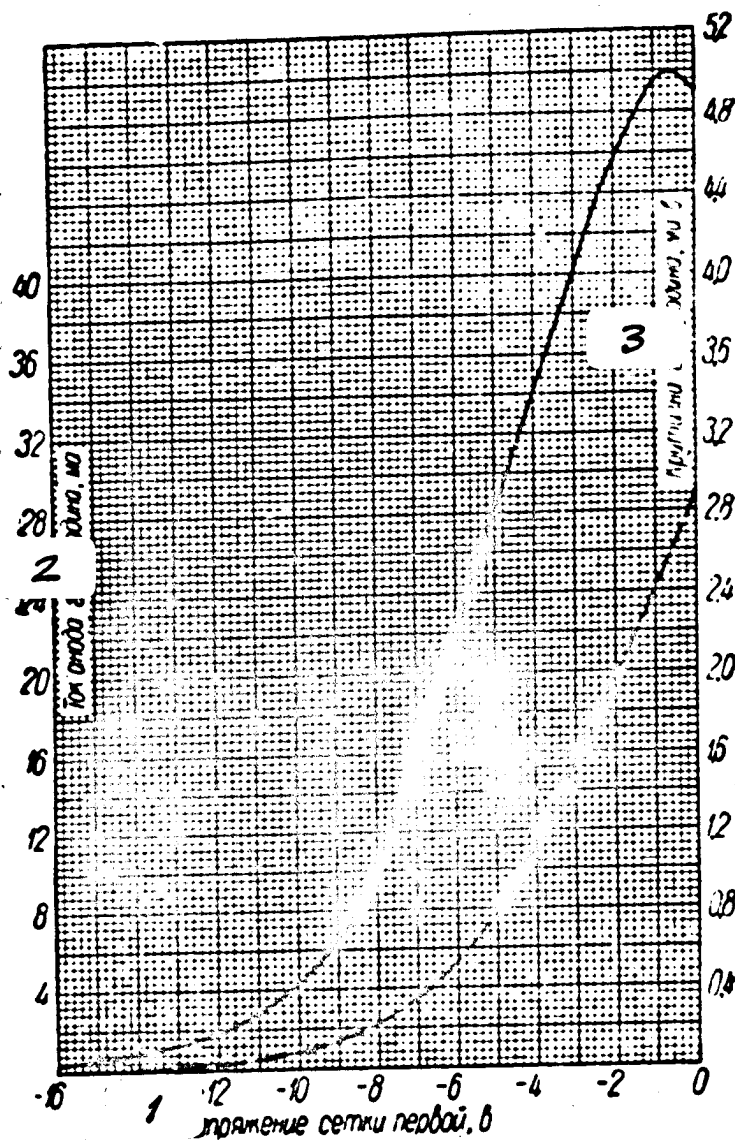
(Above material published April 1959, PKB, G-1)

HEPTODE CONVERTER

6A10S

Average Heterodyne Characteristics

———— Mutual conductances; ----- plate-grid; heater voltage, 6.3 v; third-grid voltage, 0 v; plate and second-grid voltages, 100 v.



1) First-grid voltage, v; 2) Plate heterodyne current, ma; 3) heterodyne mutual conductance, ma/v.

(Above material published April 1959, PKB, G-3)

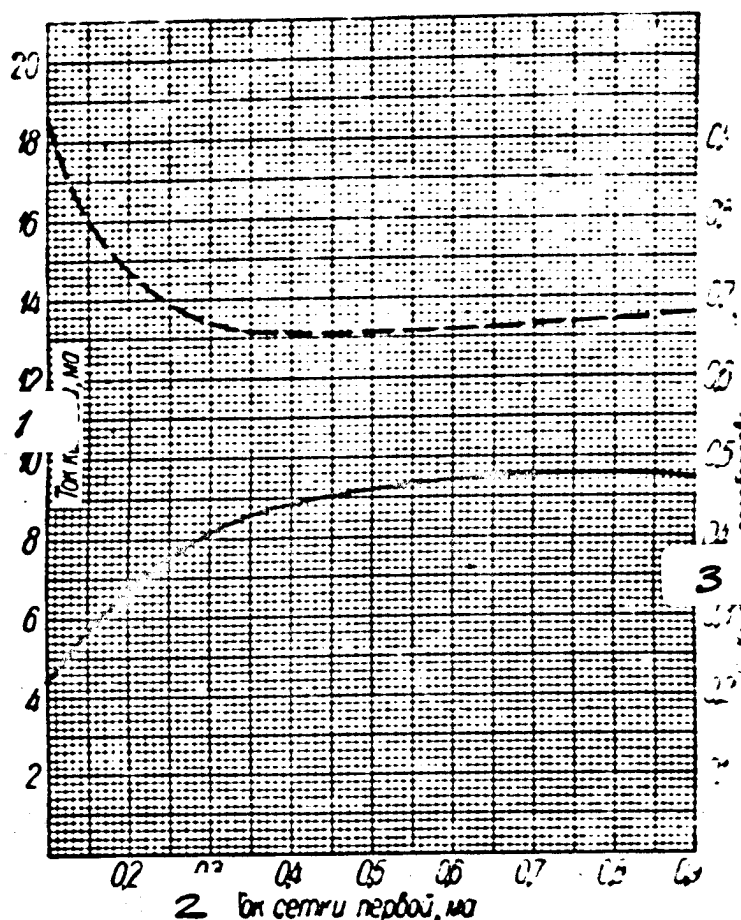
HEPTODE CONVERTER

6A10S

Average Characteristics

(as a function of first-grid current)

———— Conversion transconductance; ----- cathode current; heater voltage, 6.3 v; plate voltage, 250 v; second-grid voltage, 100 v; third-grid voltage, -3 v; grid leakage resistance, 20 kohm.



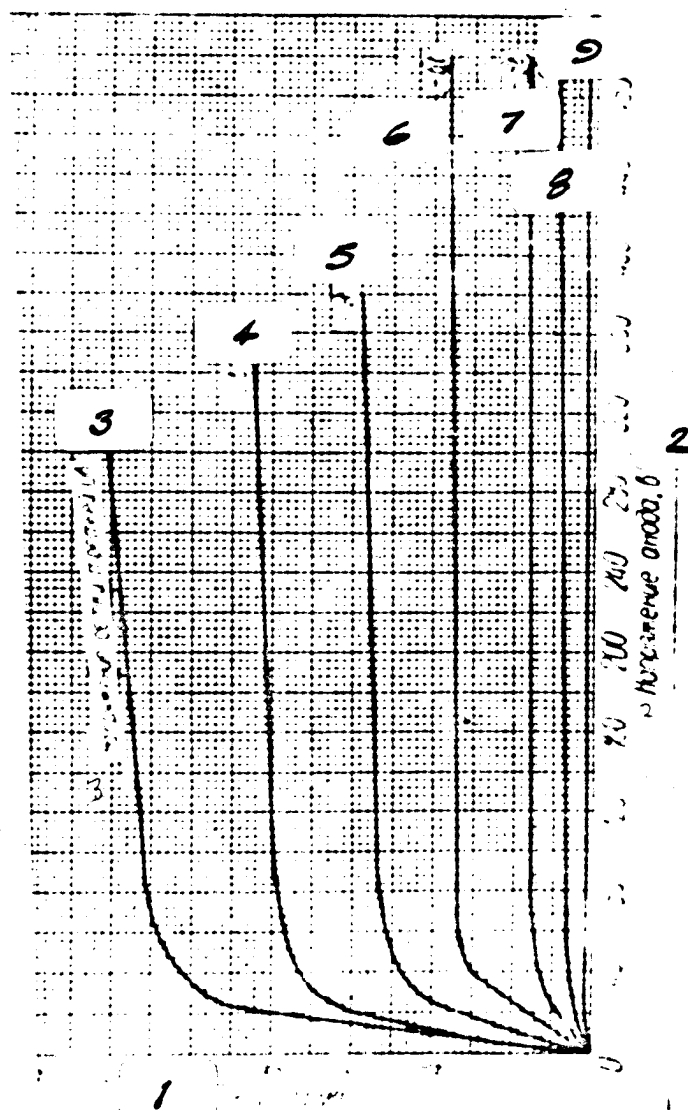
1) Cathode current, ma; 2) first-grid current, ma; 3) conversion transconductance, ma/v [probable translation; obscured in original].

HEPTODE CONVERTER

6A10S

Average Plate Characteristics

Heater voltage, 6.3 v; second-grid voltage, 100 v; first-grid voltage, 0 v.



- 1) Plate current, ma; 2) plate voltage, v; 3) third-grid voltage, 0 v;
 4) -2 v; 5) -4 v; 6) -6 v; 7) -8 v; 8) -10 v; 9) -15 v.

(Above material published April 1959, PKB, G-2)

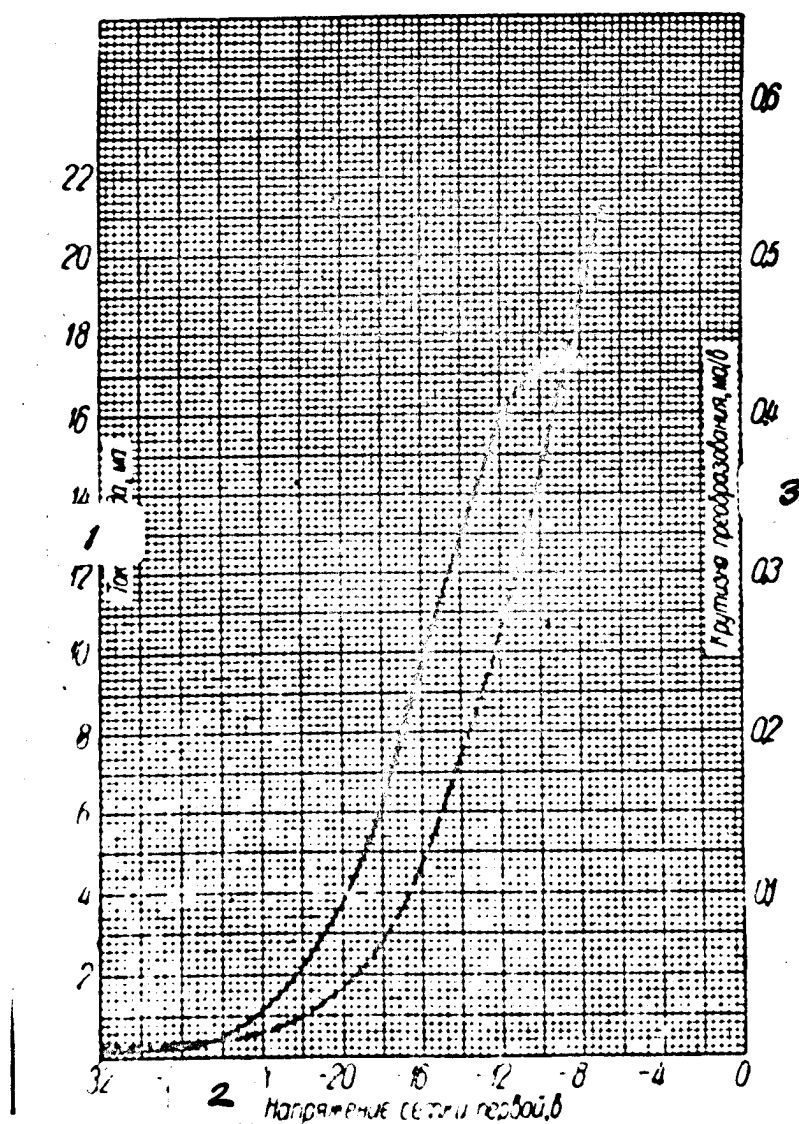
HEPTODE CONVERTER

6A10S

Average Dynamic Characteristics

(as a function of negative first-grid voltage)

———— Conversion transconductance; ----- cathode current; heater voltage, 6.3 v; second-grid voltage, 100 v; plate voltage, 250 v; third-grid voltage, -3 v; alternating first-grid voltage, 11 v (eff).



1) Cathode current, ma; 2) first-grid voltage, v; 3) conversion transconductance, ma/v.

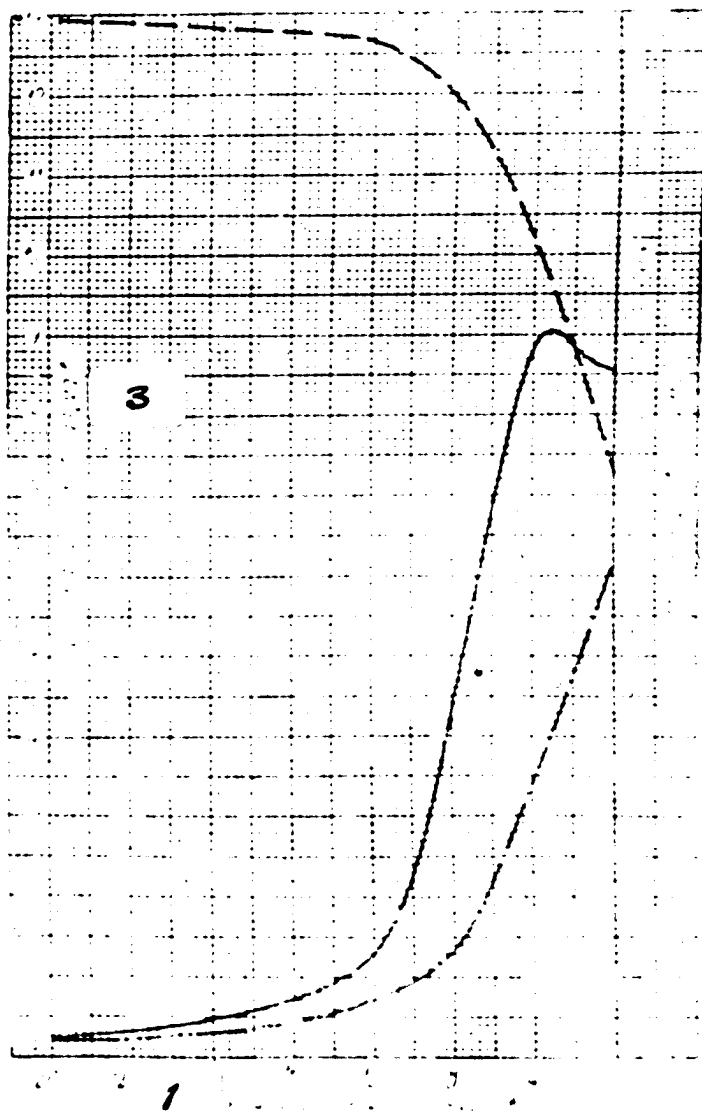
(Above material published April 1959, PKB, G-4)

HEPTODE CONVERTER

6A10S

Average Characteristics

———— Conversion transconductance; ----- grid (for second grid);
 - - - - - Plate-grid; heater voltage, 6.3 v; plate voltage, 250 v;
 second-grid voltage, 100 v; grid leakage resistance, 20 kohm;
 first-grid current, 0.5 ma.



- 1) Third-grid voltage, v; 2) plate current, second-grid current, ma;
 3) conversion transconductance, ma/v.

(Above material published April 1959, PKB, G-6)

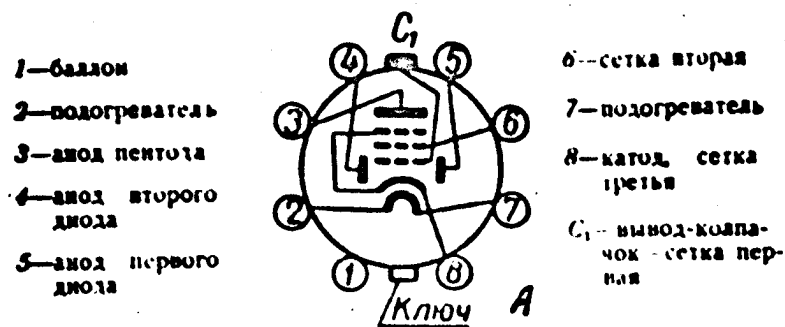
DUAL DIODE-PENTODE

6B8

Basic function radio-frequency detector and amplifier.Construction metal.General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Maximum weight
 Dimension drawing — 4M

80 ma
 33 mm
 44 grams

Connection Diagram for Electrodes and Leads

1) Envelope; 2) heater; 3) pentode plate; 4) plate of second diode;
 5) plate of first diode; 6) screen; 7) heater; 8) cathode, suppressor;
 C₁) lead-cap — first grid; A) Key.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	300 ± 25 ma
Pentode plate voltage (=)	250 v
Screen voltage (=)	125 v
First-grid voltage (=)	-3 v
Plate current for each diode	no less than 0.8 ma
Pentode plate current	10 ± 2.7 ma
Pentode plate current for first-grid voltage of -21 v	no more than 70 μa
Screen current	2.45 ± 0.75 ma
Pentode transconductance	1.65 ± 0.35 ma/v
Pentode transconductance for heater voltage of 5.7 v	no less than 0.9 ma/v
First-grid back current	no more than 1 μa
First-grid thermionic-emission current	no more than 1.5 μa
Cathode emission current	no less than 25 ma
Cathode warm-up time	no more than 25 sec
Leakage current between cathode and heater	no more than 20 μa

(Above material published April 1959, PKB, Sheet 1)

DUAL DIODE-PENTODE

6B8

First-grid insulation resistance	no less than 20 megohm
Plate insulation resistance	no less than 20 megohm
Service life	500 hours
Service-life criteria:	
pentode transconductance	no less than 0.95 ma/v
diode plate current	no less than 0.3 ma

Interelectrode Capacitances

Input	$6 \pm 1 \mu\text{f}$
Output	$8.25 \pm 1.75 \mu\text{f}$
Transfer	$0.005 \mu\text{f}$

Maximum Permissible Operating Data

Maximum heater voltage {~ or =}	6.9 v
Minimum heater voltage {~ or =}	5.7 v
Maximum plate voltage (=)	275 v
Maximum screen voltage (=)	140 v
Maximum mean rectified current for each diode	1 ma
Maximum voltage between cathode and heater (=)	100 v

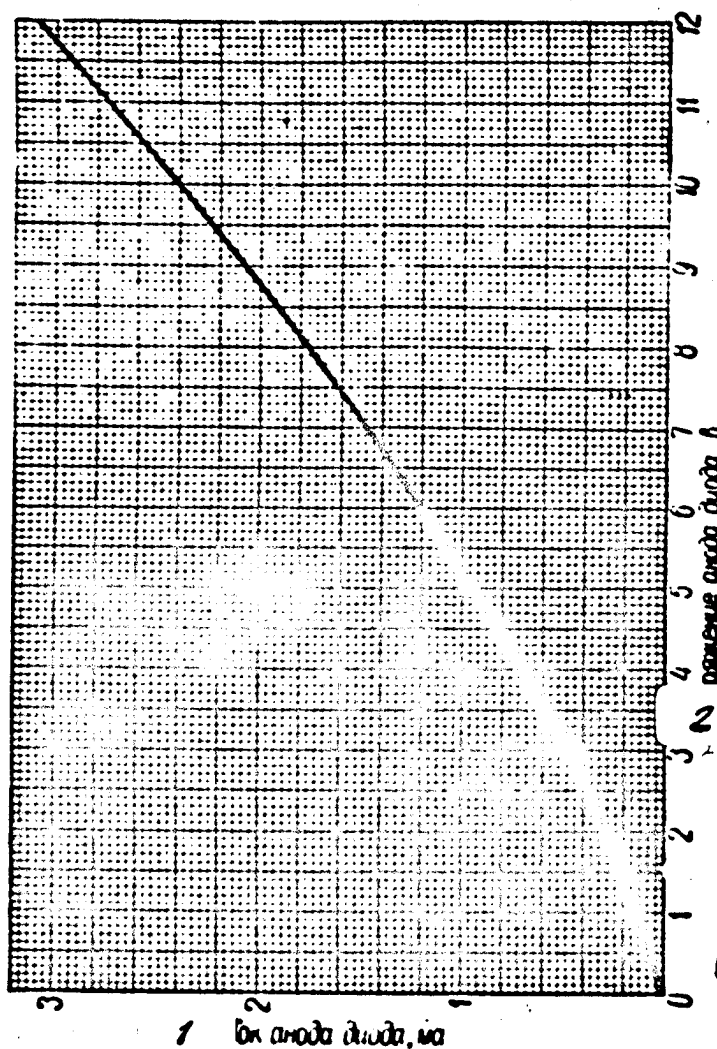
(Above material published April 1959, PKB, Sheet 1)

DUAL DIODE-PENTODE

6B8

Average Diode Plate Curve

Heater voltage, 6.3 v.



1) Diode plate current, ma; 2) diode plate voltage, v.

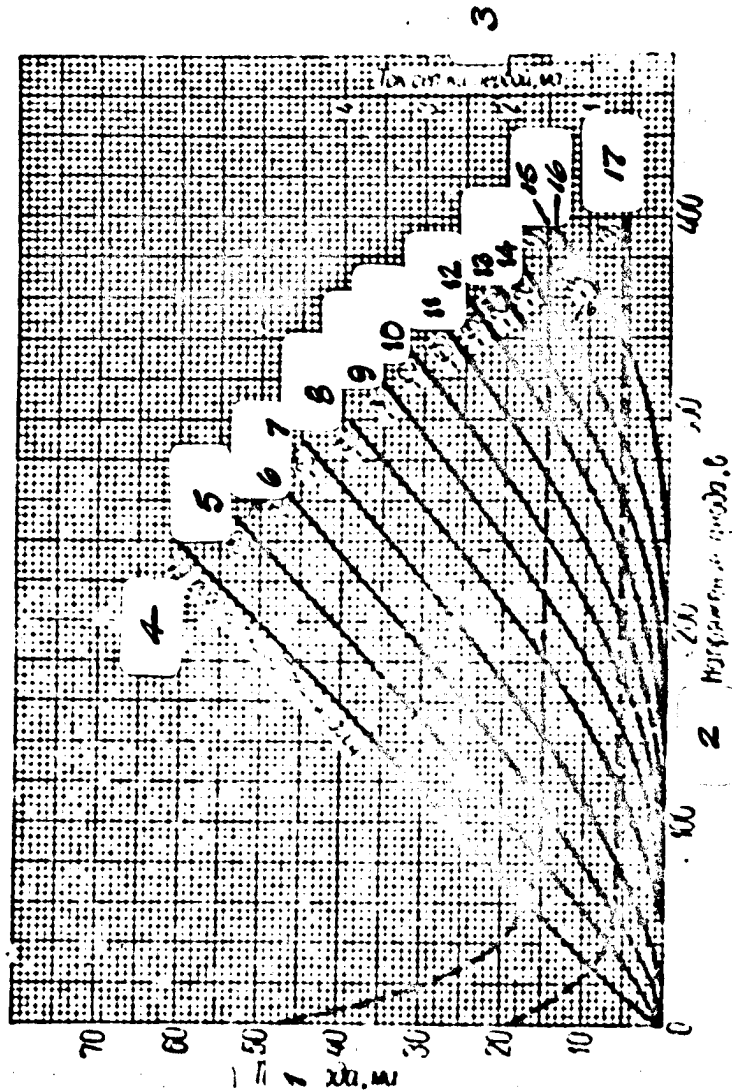
(Above material published April 1959, PKB, G-1)

DUAL DIODE-PENTODE

6B8

Average Characteristics (Triode Connection)

———— Plate; ----- grid-plate (for first grid); heater voltage, 6.3 v.



- 1) Plate current, ma; 2) plate voltage, v; 3) first-grid current, ma;
 4) first-grid voltage, 6 v; 5) 3 v; 6) 0 v; 7) -3 v; 8) -6 v; 9) -9 v;
 10) -12 v; 11) -15 v; 12) -18 v; 13) -21 v; 14) -24 v; 15) 6 v;
 16) -30 v; 17) 3 v.

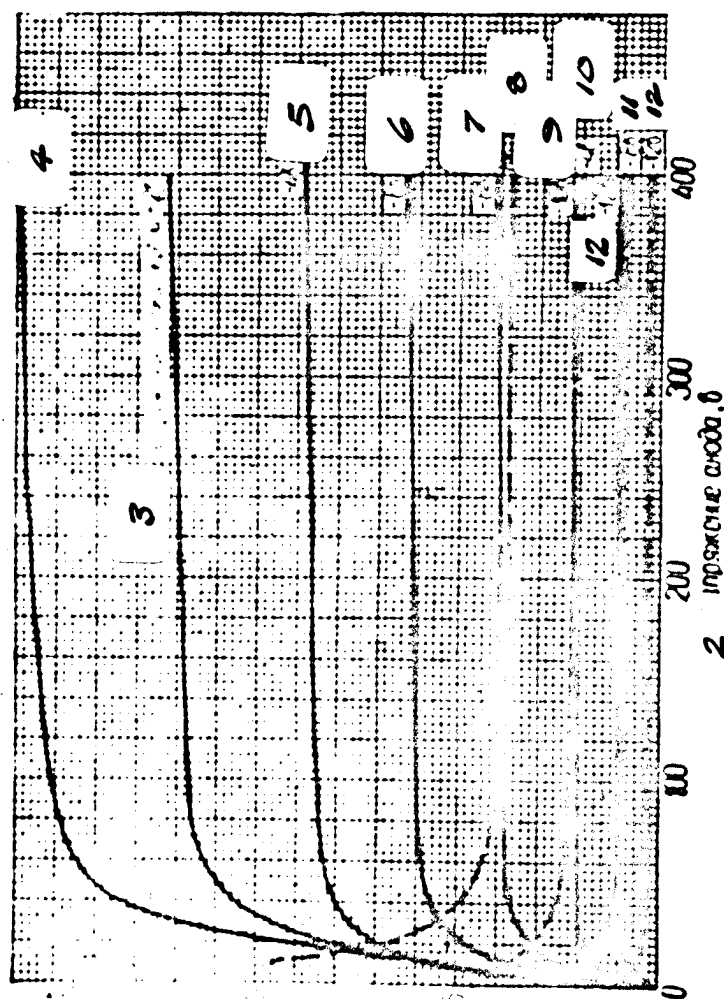
(Above material published April 1959, PKB, G-3)

DUAL DIODE-PENTODE

6B8

Average Characteristics

———— Plate; ----- Grid-plate (for second grid); heater voltage, 6.3 v; second-grid voltage, 125 v.



1) Plate current, screen current, ma; 2) plate voltage, v; 3) first-grid voltage, -2 v; 4) 0 v; 5) -4 v; 6) -6 v; 7) -8 v; 8) 0 v; 9) -10 v; 10) -4 v; 11) -8 v; 12) -12 v; 13) -12 v.

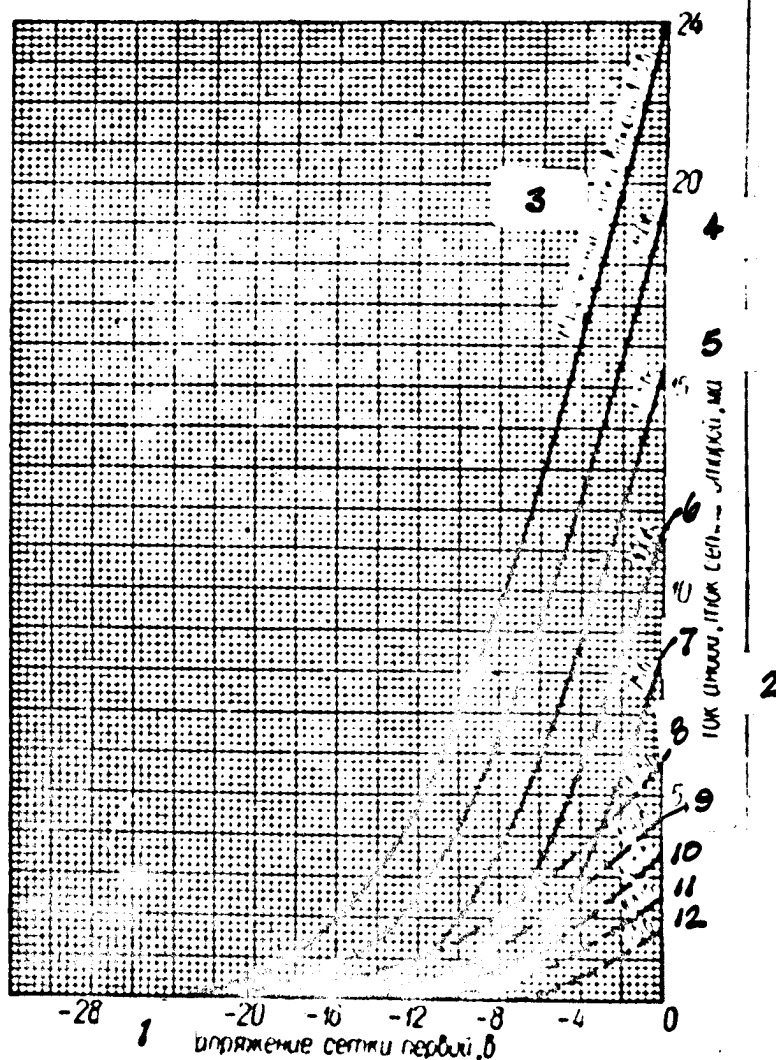
(Above material published April 1959, PKB, G-2)

DUAL DIODE-PENTODE

6B8

Average Characteristics

———— Plate-grid; ----- grid (for second grid); heater voltage, 6.3 v; plate voltage, 250 v.



- 1) First-grid voltage, v; 2) plate current, screen current, ma;
 3) screen voltage, 175 v; 4) 150 v; 5) 125 v; 6) 100 v; 7) 75 v;
 8) 175 v; 9) 150 v; 10) 125 v; 11) 100 v; 12) 75 v.

(Above material published April 1959, PKB, G-4)

SECONDARY-EMISSION PENTODE

6V1P

Basic function service in pulse-amplifier circuits.Construction glass miniature.General Data

Cathode — oxide-coated heater-type

Maximum height

75 mm

Maximum diameter

22.5 mm

Maximum weight

19 grams

Number of pins

9

Dimension drawing — 18P

Connection Diagram for Electrodes and Pins

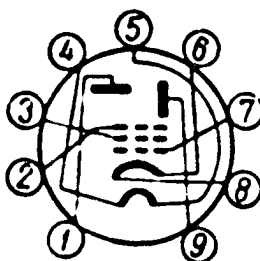
1 — анод

2 — сетка третья
(экран)

3 — сетка вторая

4 — подогреватель

5 — подогреватель



6 — катод

7 — сетка первая

8 — катод

9 — динод

- 1) Plate; 2) third grid (shield); 3) second grid; 4) heater; 5) heater;
6) cathode; 7) first grid; 8) cathode; 9) dynode.

Electrical Data

Heater voltage (~ or =)

6.3 v

Heater current

no more than 400 ma

Plate voltage (=)

250 v

Second-grid voltage (=)

250 v

Dynode voltage (=)

150 v

Resistance in cathode circuit using self-biasing

200 ohms

Resistance of internal circuit between dynode and cathode

no more than 1.5 kohm

Plate current*

 26 ± 4 ma

Plate current-mutual conductance*

 29 ± 5 ma/v

Plate current mutual conductance for heater voltage of 5.7 v*

no less than 20 ma/v

Dynode current (inverse)*

 20 ± 4 ma

*Power-supply for dynode is shunted by a resistance of not less than 1.5 kohm.

(Above material published April 1959, PKB, Sheet 1)

SECONDARY-EMISSION PENTODE

6V1P

Dynode-current mutual conductance*	21 ± 5 ma/v
Dynode-current mutual conductance for heater voltage of 5.7 v*	no less than 14 ma/v
Second-grid current*	no more than 3.2 ma
Equivalent noise resistance (plate)*	1.8 megohm
Equivalent noise resistance (dynode)*	2.3 megohm
Input resistance at a frequency of 60 Mc*	7.5 megohm
Input resistance at a frequency of 100 Mc*	2.3 megohm
Natural resonant frequency of tube input circuit**	600 Mc
Negative first-grid voltage for plate current of 10 µa*	no more than 8 v
First-grid back current*	no more than 0.5 µa
Leakage current between cathode and heater***	no more than 30 µa
Service life, pulse operation	500 hours
Service life, continuous operation	250 hours
Service-life criteria:	
plate-current mutual conductance	no less than 19 ma/v
dynode-current mutual conductance	no less than 13 ma/v

*Dynode power-supply is shunted by resistance of no less than 1.5 kohm.
 **Two cathode leads connected in parallel.
 ***For heater voltage, with respect to cathode, of -250 v.

Interelectrode Capacitances

Input (first grid-remaining electrodes, with exception of plate)	9 ± 0.4 µµf
Output (plate-remaining electrodes, with exception of first grid)	4.6 ± 0.4 µµf
Output (dynode-remaining electrodes, with exception of first grid)	6.4 ± 0.4 µµf
Transfer (first grid-plate)*	no more than 0.007 µµf
Transfer (first grid-dynode)*	no more than 0.025 µµf
Cathode heater	7.25 ± 0.25 µµf
Plate-dynode	2.4 µµf

*Measurements carried out within internal shield.

Maximum Permissible Operating Data

Maximum heater voltage (~ or =)	7 v
Minimum heater voltage (~ or =)	5.7 v
Maximum plate voltage (=)	500 v
Maximum dynode voltage (=)	200 v
Maximum second-grid voltage (=)	500 v

(Above material published April 1959, PKB, Sheet 1)

SECONDARY-EMISSION PENTODE

6V1P

Maximum dynode power dissipation*	0.8 watt
Maximum plate power dissipation**	4.5 watts
Maximum second-grid power dissipation	0.8 watt
Maximum first-grid power dissipation	0.1 watt
Maximum voltage between cathode and heater (=):	
for negative heater potential	250 v
for positive heater potential	160 v
Maximum first-grid-circuit voltage	0.5 megohm [sic]

*The power dissipated by the dynode equals the product of the dynode voltage and the difference between the plate and dynode currents.

**The plate power dissipation equals the product of the plate current and the difference between the plate and dynode voltages.

Resistance to External Effects

Maximum atmospheric pressure	20 mm Hg
Maximum vibration acceleration*	6 g
Maximum constant acceleration -	100 g

*For vibration frequency of 50 cps.

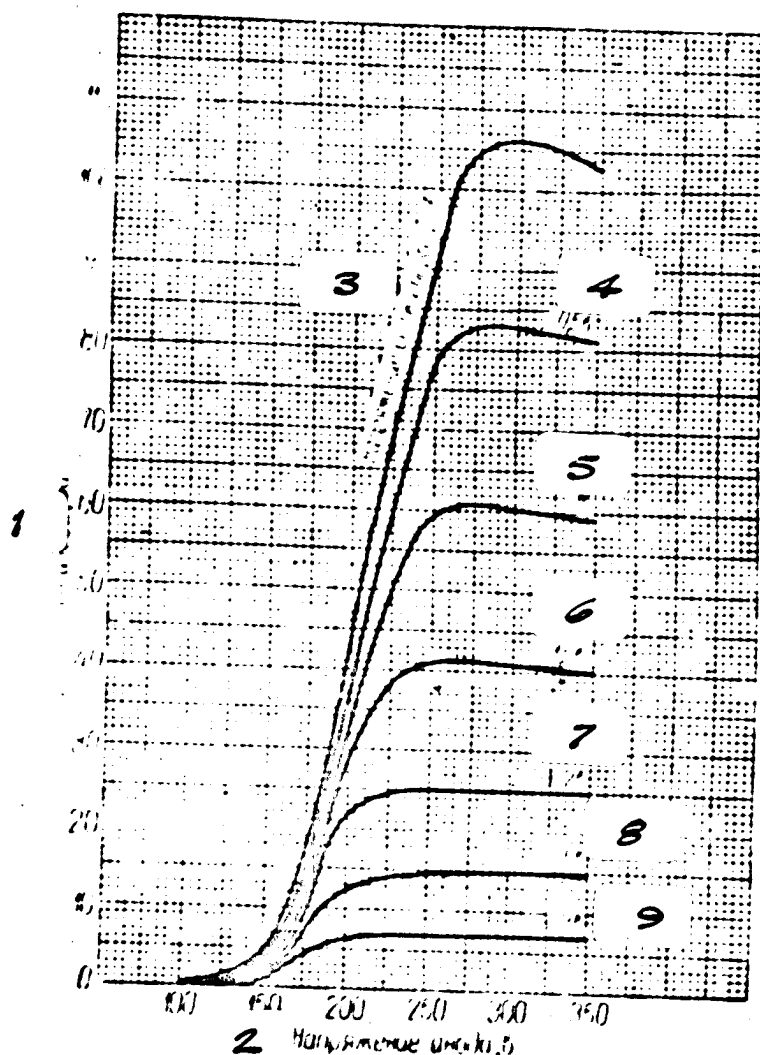
(Above material published April 1959, PKB, Sheet 2)

SECONDARY-EMISSION PENTODE

6V1P

Average Plate Characteristics

Heater voltage, 6.3 v; dynode voltage, 150 v; second-grid voltage, 250 v.



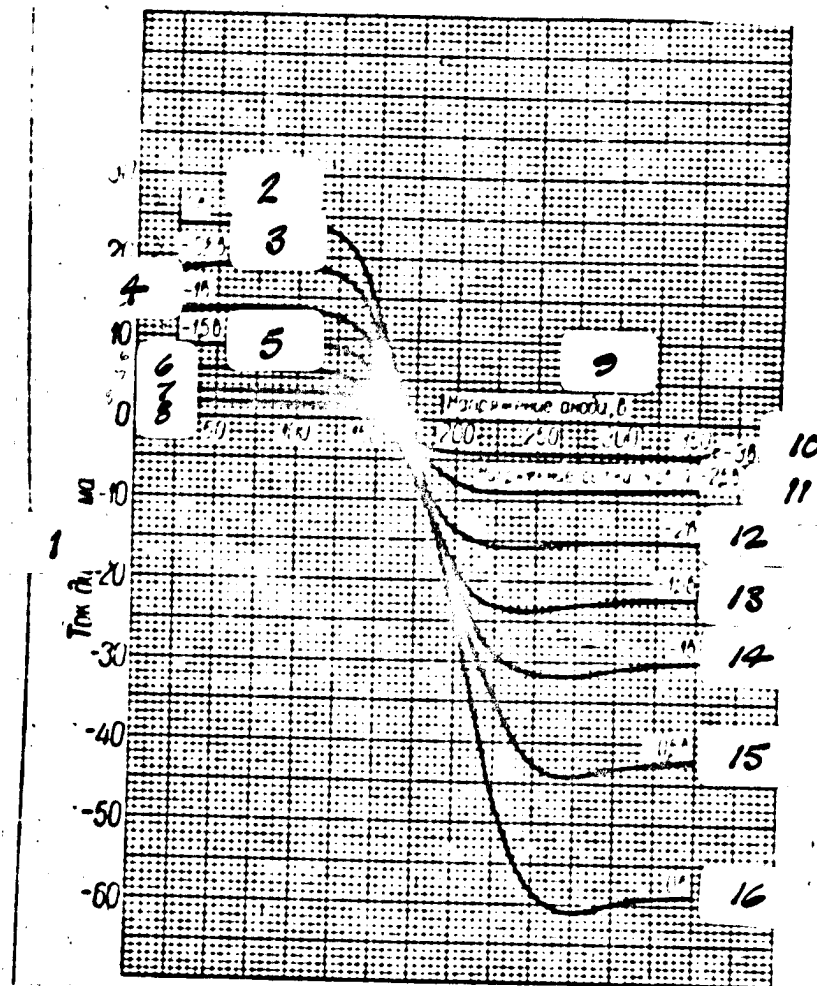
(Above material published April 1959, PKB, G-1)

SECONDARY-EMISSION PENTODE

6V1P

Average Dynode-Plate Curves

Heater voltage, 6.3 v; dynode voltage, 150 v; second-grid voltage, 250 v.



1) Dynode current, ma; 2) 0 v; 3) 0.5 v; 4) -1 v; 5) -1.5 v; 6) -2 v; 7) -2.5 v; 8) -3 v; 9) plate current, v; 10) -3 v; 11) first-grid voltage, -2.5 v; 12) -2 v; 13) -1.5 v; 14) -1 v; 15) -1.5 v; 16) 0 v.

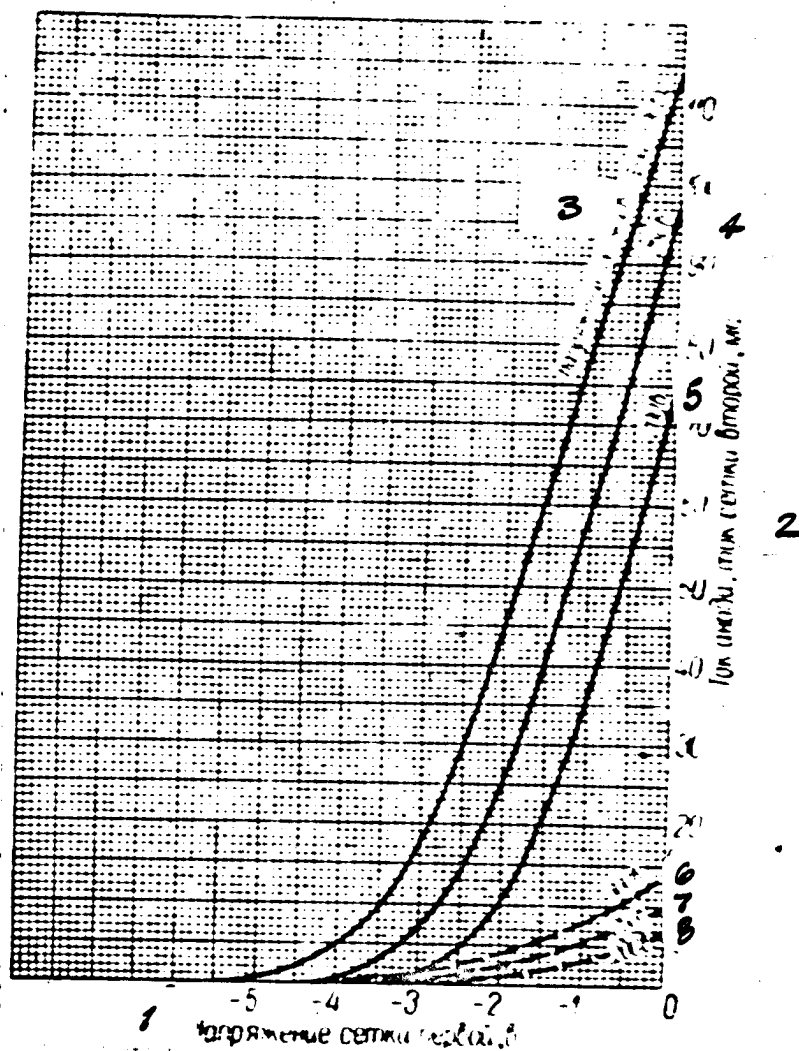
(Above material published April 1959, PKB, G-3)

SECONDARY-EMISSION PENTODE

6V1P

Average Characteristics

— Plate-grid; ----- grid (second grid); heater voltage, 6.3 v; plate voltage, 250 v; dynode voltage, 150 v.



- 1) First-grid voltage, v; 2) plate current, second-grid current, ma;
 3) second-grid voltage, 300 v; 4) 250 v; 5) 200 v; 6) 300 v; 7) 250 v;
 8) 200 v.

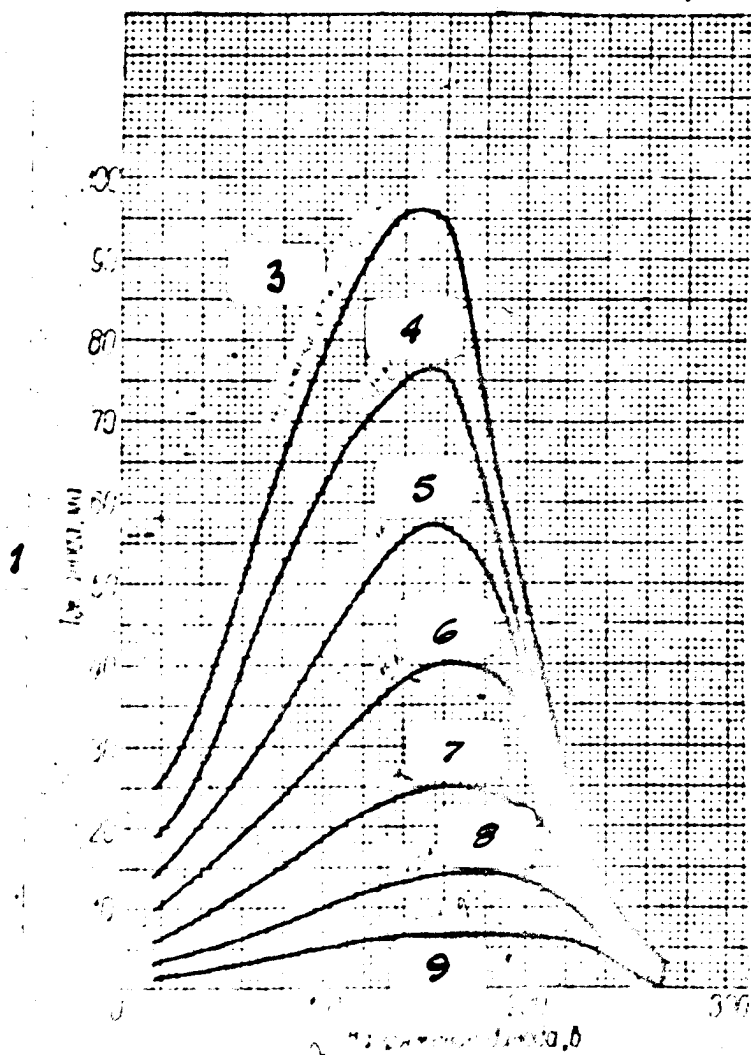
(Above material published April 1959, PKB, G-5)

SECONDARY-EMISSION PENTODE

6V1P

Average Plate-Dynode Curves

Heater voltage, 6.3 v; plate voltage, 250 v; second-grid voltage, 250 v.



1) Plate current, ma; 2) dynode voltage, v; 3) first-grid voltage, 0 v; 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) -2 v; 8) -2.5 v; 9) -3 v.

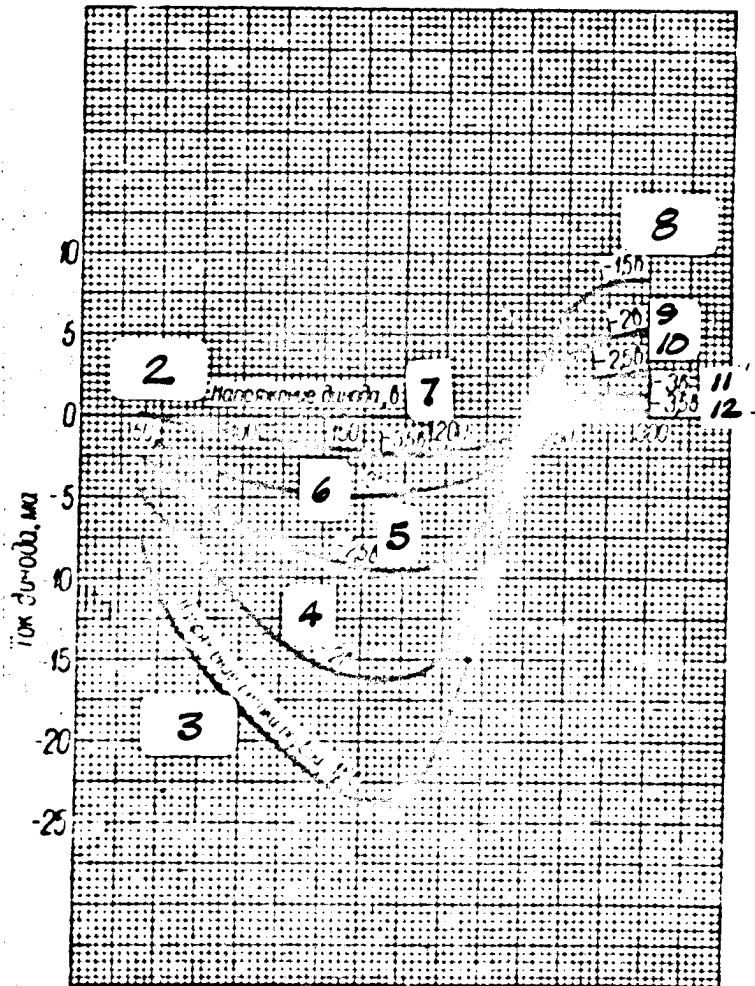
(Above material published April 1959, PKB, G-2)

SECONDARY-EMISSION PENTODE

6V1P

Average Dynode Curves

Heater voltage, 6.3 v; plate voltage, 250 v; second-grid voltage, 250 v.



1) Dynode current, ma; 2) dynode voltage, v; 3) first-grid voltage, -1.5 v; 4) -2 v; 5) -2.5 v; 6) -3 v; 7) -3.5 v; 8) -1.5 v; 9) -2 v; 10) -2.5 v; 11) -3 v; 12) -3.5 v.

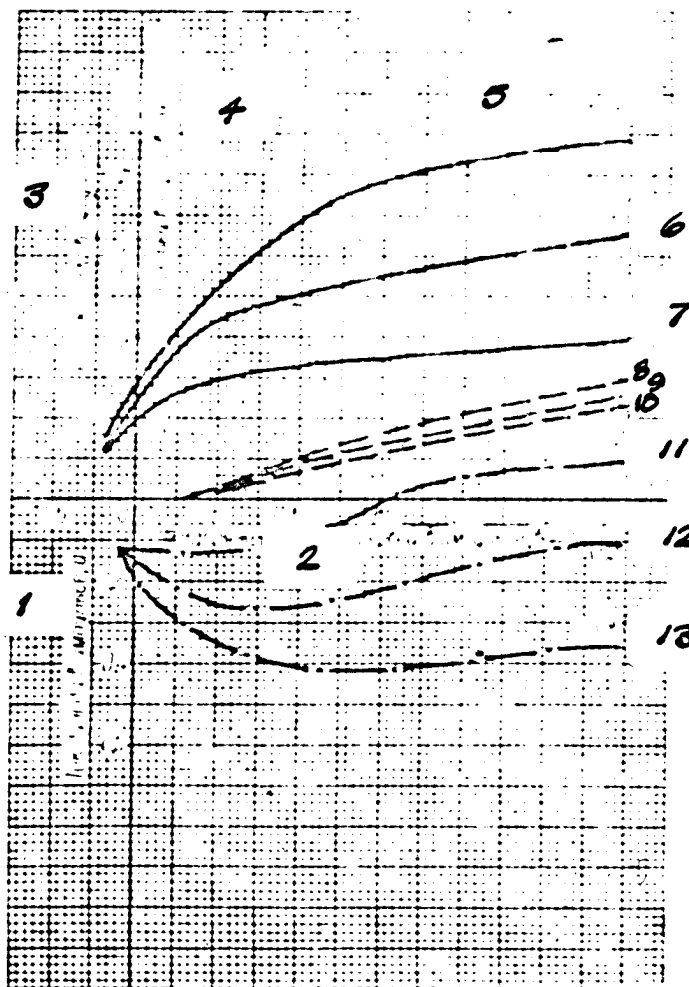
(Above material published April 1959, PKB, G-4)

SECONDARY-EMISSION PENTODE

6V1P

Average Pulse Characteristics

———— Plate-grid; - - - - - dynode-grid; ----- grid (for second grid); heater voltage, 6.3 v; dynode voltage, 150 v; second-grid voltage, 250 v.



- 1) Dynode pulse current, amps; 2) first-grid pulse voltage, v;
 3) plate pulse current, amp; 4) second-grid pulse current, amp;
 5) plate voltage, 500 v; 6) 400 v; 7) 300 v; 8) 500 v; 9) 400 v;
 10) 300 v; 11) 300 v; 12) 400 v; 13) 500 v.

(Above material published April 1959, PKB, G-6)

DUAL DIODE-TRIODE

6G1

Basic function audio-frequency detector and voltage amplifier.Construction metal.General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Maximum weight
 Base — octal, Tsl-1-8A
 Dimension drawing — 1M

67 mm
 33 mm
 40 grams

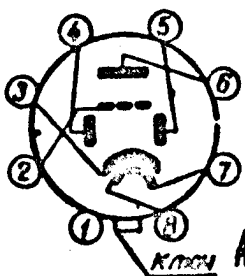
Connection Diagram for Electrodes and Pins

1 — баллон

2 — сетка

3 — катод

4 — анод второго диода



5 — анод первого диода

6 — анод триода

7 — подогреватель

8 — подогреватель

1) Envelope; 2) grid; 3) cathode; 4) plate of second diode; 5) plate of first diode; 6) triode plate; 7) heater; 8) heater; A) Key.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	300 ± 25 ma
Triode plate voltage (=)	250 v
Grid voltage (=)	-9 v
Plate current for each diode*	no less than 0.8 ma
Triode plate current	9.5 ± 3.2 ma
Triode transconductance	1.9 ± 0.4 ma/v
Triode transconductance for heater voltage of 5.7 v	no less than 1.25 ma/v
Amplification factor	16 ± 2
Triode-section cathode emission current**	no less than 30 ma
Grid back current	no more than 1.0 μ a
Leakage current between cathode and heater	no more than 20 μ a
Warm-up time for cathode	no more than 20 sec

*For diode plate voltage of 10 v and 0 volts on remaining electrodes.
 **For plate and grid voltages of 30 v.

← Addition introduced.

(Above material published April 1959, PKB, Sheet 1)

DUAL DIODE-TRIODE

6G1

Grid insulation resistance	no less than 20 megohm
Plate insulation resistance	no less than 20 megohm
Service life	500 hours
Service-life criteria:	
triode transconductance	no less than 1.2 ma/v
diode plate current*	no less than 0.3 ma

*For diode plate current of 10 v and 0 volts on remaining electrodes.

Maximum Permissible Operating Data

Maximum heater voltage (~ or =)	7 v
Minimum heater voltage (~ or =)	5.7 v
Maximum triode plate voltage (=)	275 v
Maximum average value of rectified current for each diode	1.0 ma
Maximum plate power dissipation	2.75 watts
Maximum voltage between cathode and heater (=)	100 v

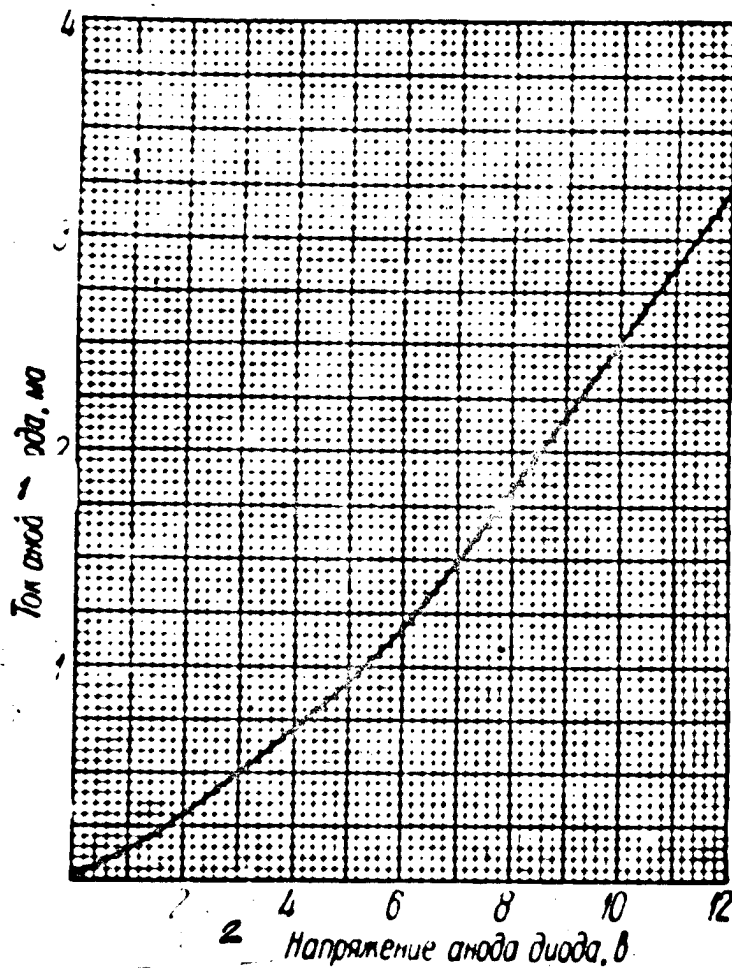
(Above material published April 1959, PKB, Sheet 1)

DUAL DIODE-TRIODE

6G1

Average Plate Characteristics of Diode

Heater voltage, 6.3 v.



1) Diode plate current, ma; 2) diode plate voltage, v.

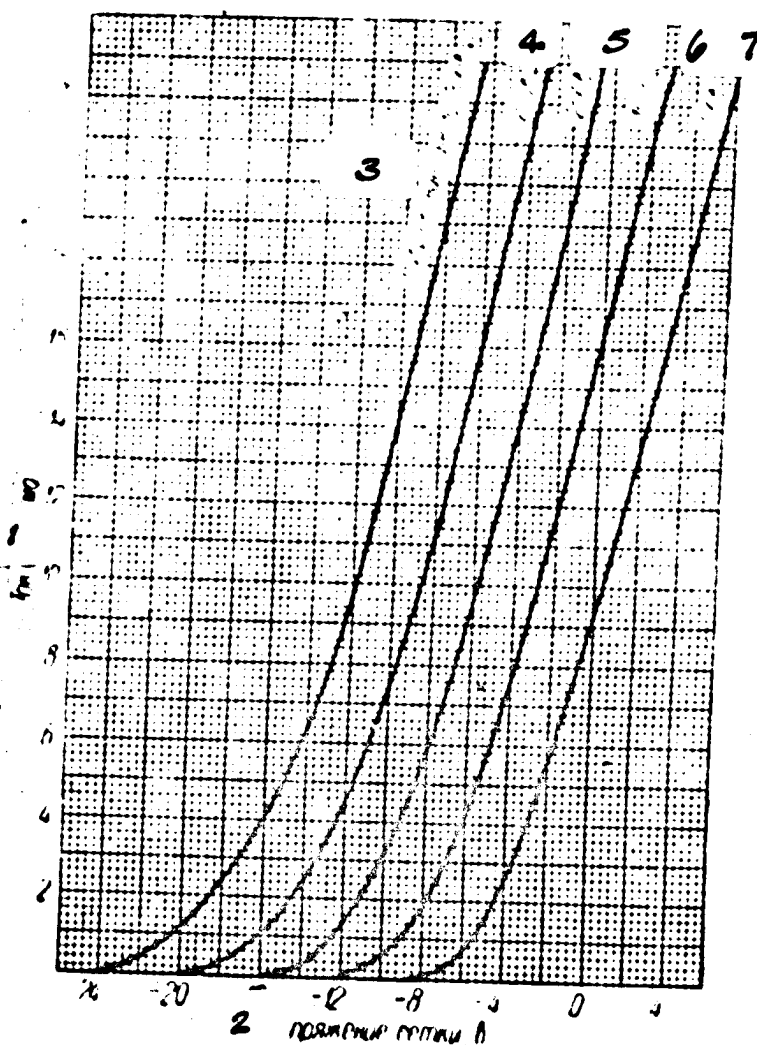
(Above material published April 1959, PKB, G-1)

DUAL DIODE-TRIODE

6G1

Average Plate-Grid Curves

Heater voltage, 6.3 v.



- 1) Plate current, ma; 2) grid voltage, v; 3) plate voltage, 300 v;
 4) 250 v; 5) 200 v; 6) 150 v; 7) 100 v.

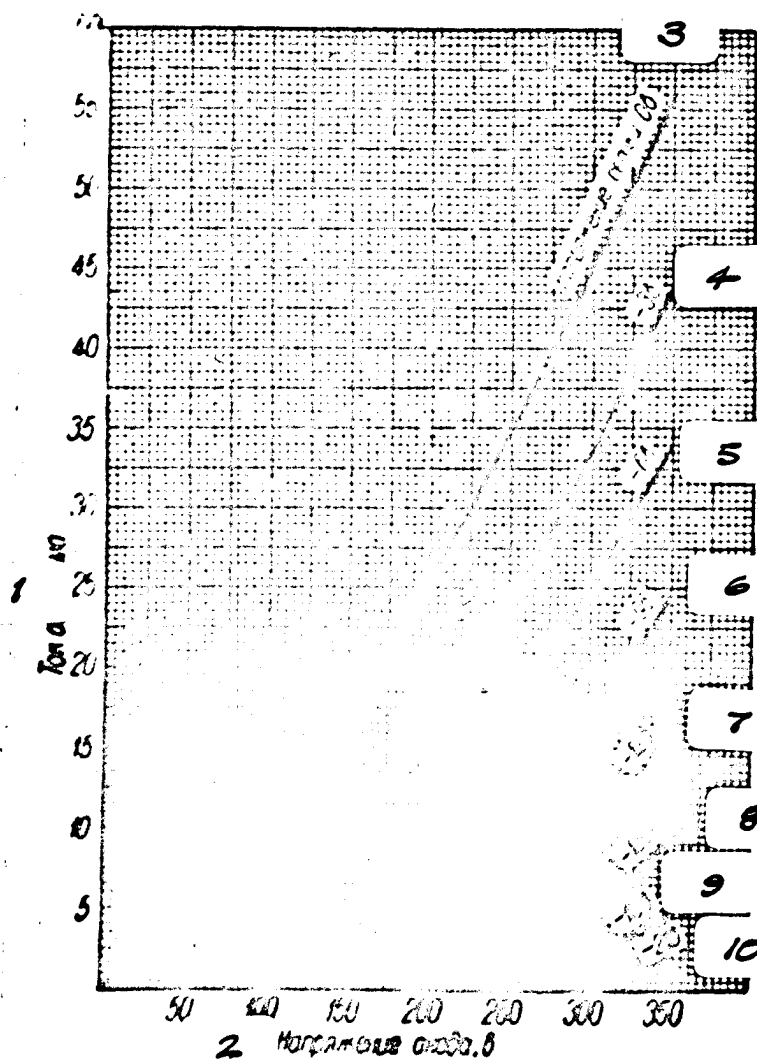
(Above material published April 1959, PKB, G-3)

DUAL DIODE-TRIODE

6G1

Average Plate Curves

Heater voltage, 6.3 v.



1) Plate current, ma; 2) plate voltage, v; 3) grid voltage, 0 v;
 4) -3 v; 5) -6 v; 6) -9 v; 7) -12 v; 8) -15 v; 9) -18 v; 10) -21 v

(Above material published April 1959, PKB, G-2)

DUAL DIODE-TRIODE

6G2

Basic function detector and audio-frequency amplifier.Construction metal.General Data

Cathode — oxide-coated heater-type

Maximum height

67 mm

Maximum diameter

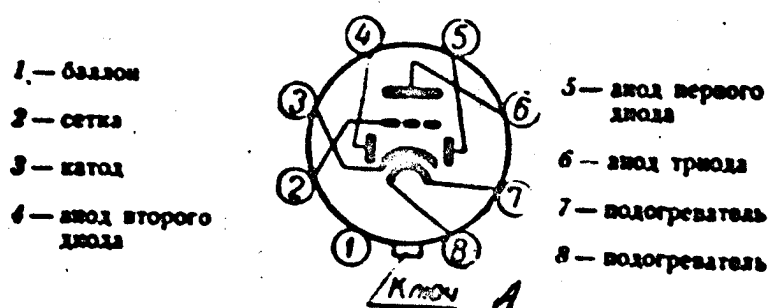
33 mm

Maximum weight

40 grams

Base — octal, Tsl-1-8A

Dimension drawing — 1M

Connection Diagram for Electrodes and Pins

1) Envelope; 2) grid; 3) cathode; 4) plate of second diode; 5) plate of first diode; 6) plate of triode; 7) heater; 8) heater; A) Key.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	300 ± 25 ma
Triode plate voltage (=)	250 v
Grid voltage (=)	-2 v
Plate current for each diode*	no less than 0.8 ma
Triode plate current	1.15 ± 0.65 ma
Triode transconductance	1.10 ± 0.30 ma/v
Triode transconductance for heater voltage of 5.7 v	no less than 0.65 ma/v
Amplification factor	100 ± 15
Cathode emission current**	no less than 30 ma
Grid back current	no more than 0.5 μa
Leakage current between cathode and heater	no more than 20 μa

*For heater voltage of 6.3 v, diode plate voltage of 10 v, and 0 volts on remaining electrodes.
 **For plate and grid voltages of 30 v.

← Addition introduced.

(Above material published April 1959, PKB, Sheet 1)

DUAL DIODE-TRIODE

6G2

Warm-up time for cathode	no more than 20 sec
Plate insulation resistance	no less than 20 megohm
Grid insulation resistance	no less than 20 megohm
Service life	500 hours
Service-life criteria:	
diode plate current	0.3 ma
triode plate current	0.4 ma ←
triode transconductance	no less than 0.73 ma/v

Maximum Permissible Operating Data

Maximum heater voltage {~ or =}	6.9 v
Minimum heater voltage {~ or =}	5.7 v
Maximum triode plate voltage (=)	330 v
Maximum value for average rectified current for each diode	1 ma
Maximum voltage between cathode and heater (=)	100 v

← Addition introduced.

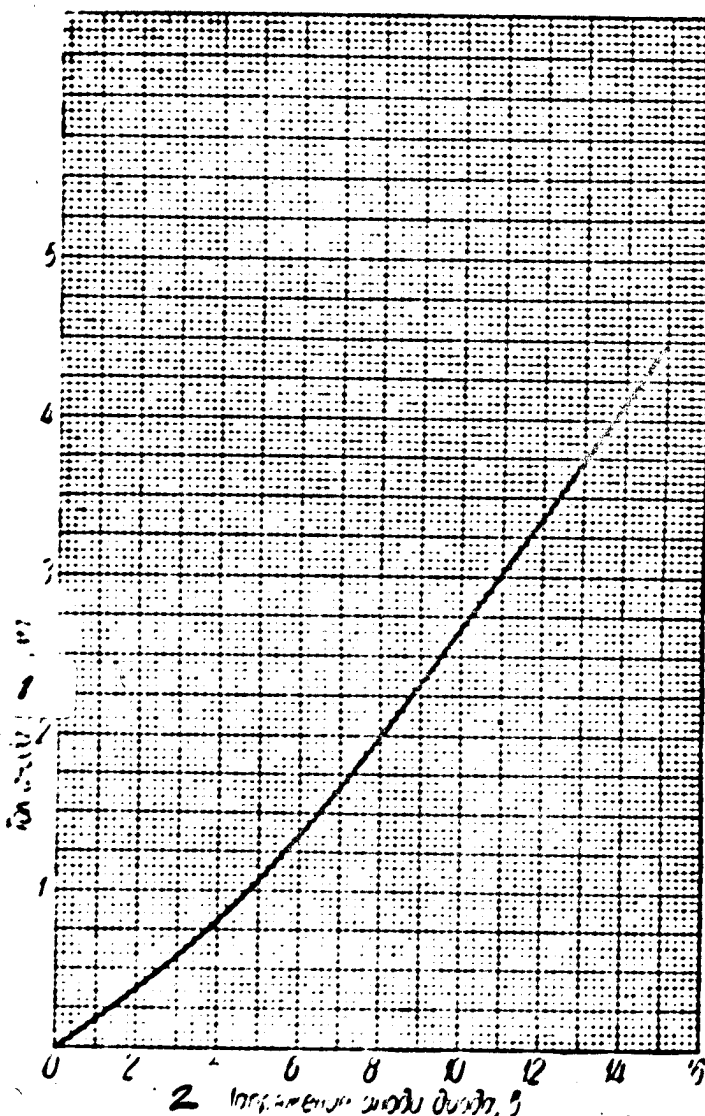
(Above material published April 1959, PKB, Sheet 1)

DUAL DIODE-TRIODE

6G2

Average Plate Curve for Diode

Heater voltage, 6.3 v.



1) Diode plate current, ma; 2) diode plate voltage, v.

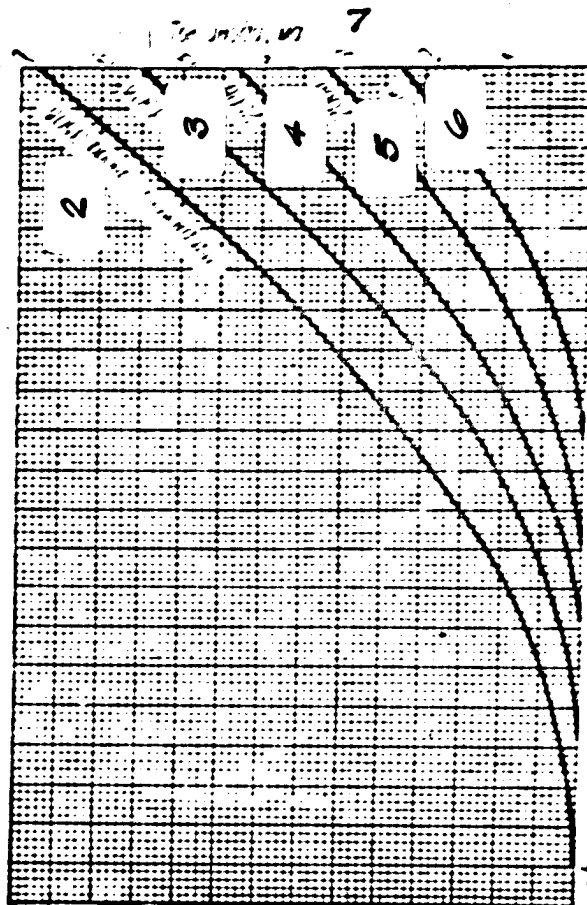
(Above material published April 1959, PKB, G-1)

DUAL DIODE-TRIODE

6G2

Average Plate-Grid Curves

Heater voltage, 6.3 v.



- 1) Grid voltage, v; 2) plate voltage, 350 v; 3) 300 v; 4) 250 v;
5) 200 v; 6) 150 v; 7) plate current, ma.

(Above material published April 1959, PKB, G-2)

TRIPLE DIODE-TRIODE

6G3P

Basic function amplitude-modulated and frequency-modulated signal detector and audio-frequency voltage amplifier.

Construction glass miniature.

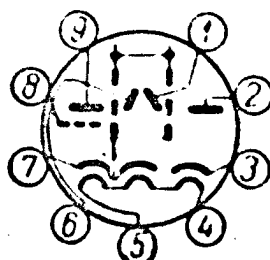
General Data

Cathode — oxide-coated heater-type
Maximum height
Maximum diameter
Maximum weight
Number of pins
Dimension drawing — 15P

60 mm
22.5 mm
15 grams
9

Connection Diagram for Electrodes and Pins

1 — анод третьего
диола;
2 — анод второго
диола
3 — катод второго
диола;
4 — подогреватель
5 — подогреватель



6 — анод первого
диола
7 — катод триода,
первого и
третьего ди-
одов, экран
8 — сетка
9 — анод триода

1) Plate of third diode; 2) plate of second diode; 3) cathode of second diode; 4) heater; 5) heater; 6) plate of first diode; 7) cathode of triode, first and thide diodes, shield; 8) grid; 9) triode plate.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	0.45 amp
Triode plate voltage (=)	250 v
Triode grid voltage (=)	-3 v
First-diode plate current*	1.5 ma
Second-diode plate current*	25 ma
Third-diode plate current*	25 ma
Triode plate current	1 ma
Triode transconductance	1.3 ma/v
Amplification factor	63
Service-life	750 hours

*For diode plate voltages of 5 v.

(Above material published April 1959, PKB, Sheet 1)

TRIPLE DIODE-TRIODE

6G3P

Interelectrode Capacitances

Triode input		2.05 μmf
Triode output		1.25 μmf
Triode transfer		2.3 μmf
First-diode transfer		1.05 μmf
Second-diode transfer		4.9 μmf
Third-diode transfer		4.5 μmf
Triode plate-first diode plate	no more than	0.1 μmf
Triode plate-second diode plate	no more than	0.1 μmf
Triode plate-third diode plate	no more than	0.1 μmf
Triode grid-first diode plate	no more than	0.05 μmf
Triode grid-third diode plate	no more than	0.02 μmf
Triode grid-second diode cathode	no more than	0.005 μmf
Second diode cathode-remaining electrodes		5.4 μmf
Second diode cathode-heater		2.8 μmf

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	7 v
Minimum heater voltage ($\sim$ or $=$)	5.5 v
Maximum inverse plate voltage for each diode ($=$)	350 v
Maximum triode plate voltage ($=$)	300 v
Maximum mean rectified current for first diode	1 ma
Maximum mean rectified current for second diode	10 ma
Maximum mean rectified current for third diode	10 ma
Maximum peak plate current, first diode	6 ma
Maximum peak plate current, second diode	75 ma
Maximum peak plate current, third diode	75 ma
Maximum plate dissipation, triode	1 watt
Maximum mean triode cathode current	5 ma
Maximum voltage between cathode and heater ($=$)	150 v
Maximum resistance in triode grid circuit with fixed bias	3 megohms
Maximum resistance in triode grid circuit with self-bias	22 megohms

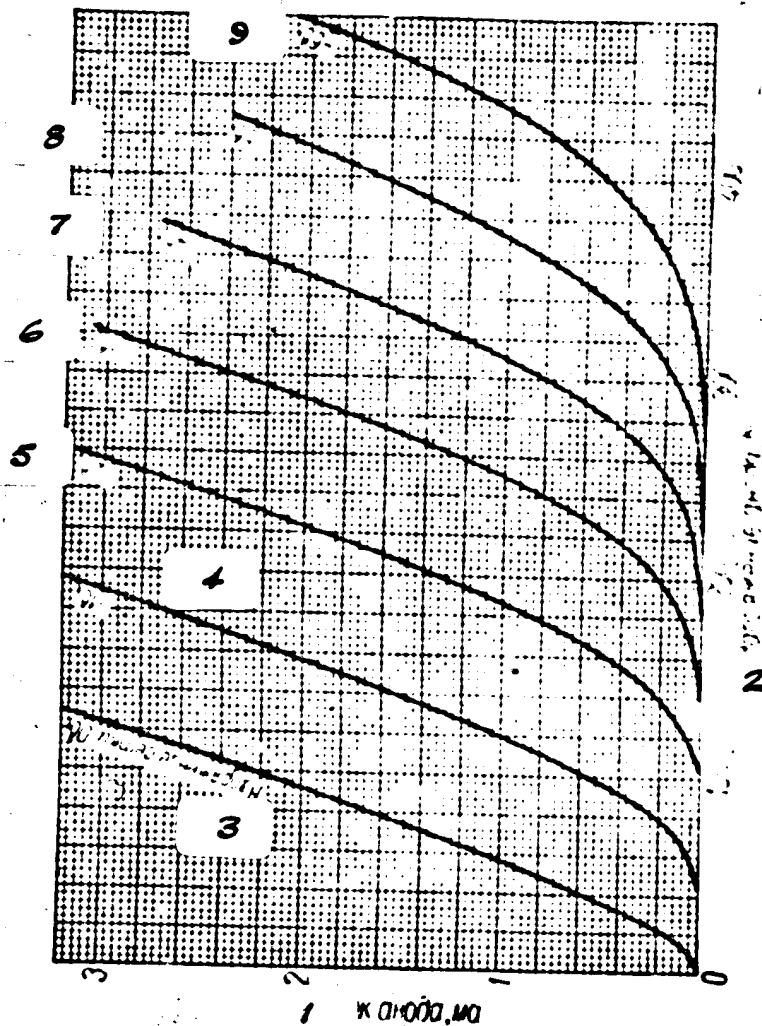
(Above material published April 1959, PKB, Sheet 1)

TRIPLE DIODE-TRIODE

6G3P

Average Triode Plate Curves

Heater voltage, 6.3 v.



- 1) Plate current, ma; 2) plate voltage, v; 3) grid voltage, 0 v;
 4) -1 v; 5) -2 v; 6) -3 v; 7) -4 v; 8) -5 v; 9) -6 v.

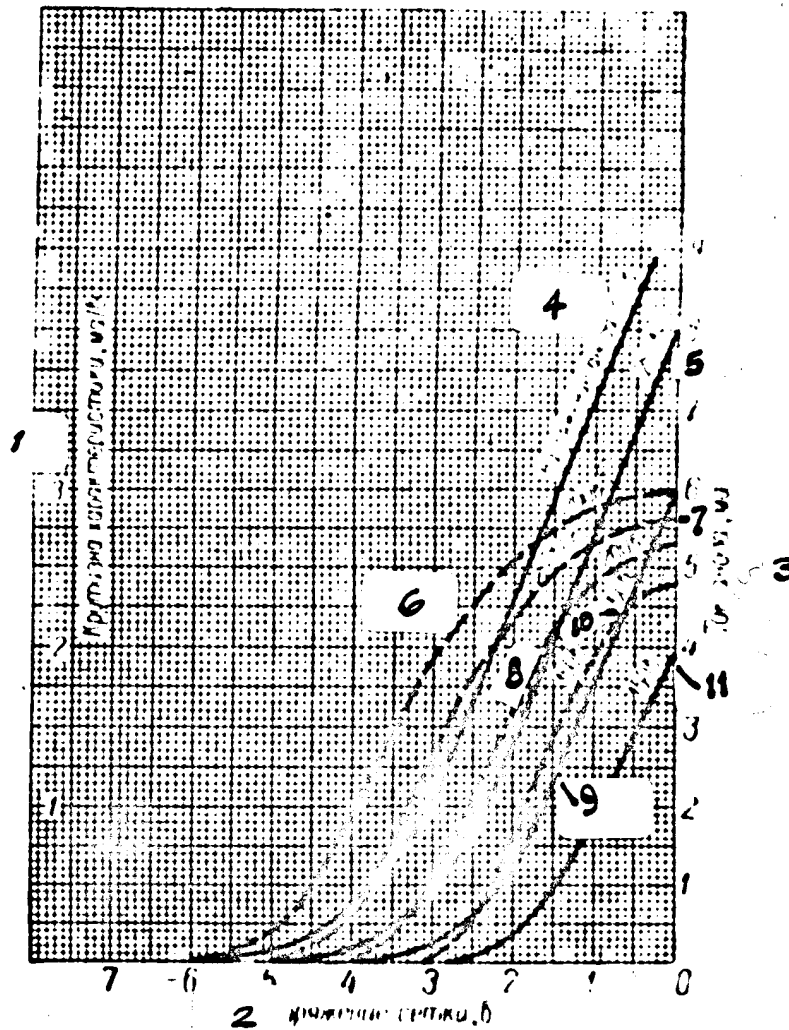
(Above material published April 1959, PKB, G-1)

TRIPLE DIODE-TRIODE

6G3P

Average Triode Characteristics

———— Plate-grid; ----- transconductance; heater voltage, 6.3 v.



- 1) Transconductance, ma/v 2) grid voltage, v; 3) plate current, ma;
 4) plate voltage, 300 v; 5) 250 v; 6) 300 v; 7) 250 v; 8) 200 v;
 9) 200 v; 10) 150 v; 11) 150 v.

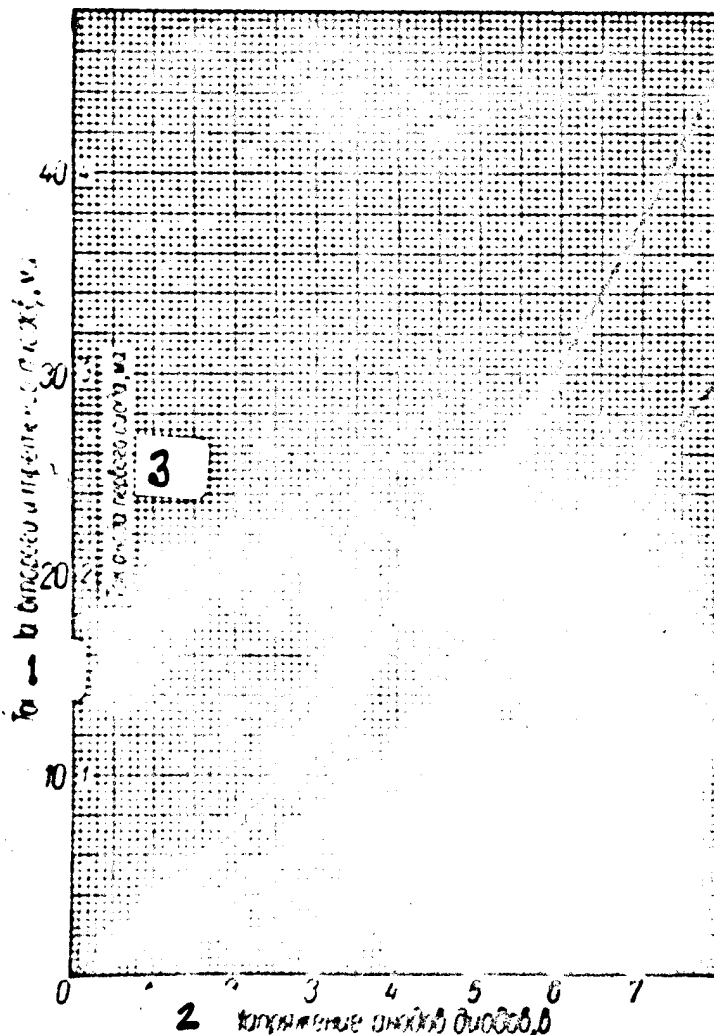
(Above material published April 1959, PKB, G-3)

TRIPLE DIODE-TRIODE

6G3P

Average Plate Curves

———— Second and third diodes; ----- first diode; heater voltage, 6.3 amp.



1) Plate current, second and third diodes, ma; 2) diode plate voltages, v; 3) first-diode plate current, ma.

(Above material published April 1959, PKB, G-2)

DUAL DIODE-TRIODE

6G7

(Common Cathode)

Basic function Detector, audio-frequency voltage amplifier.Construction metal.General Data

Cathode — oxide-coated heater-type

Maximum height

80 mm

Maximum diameter

33 mm

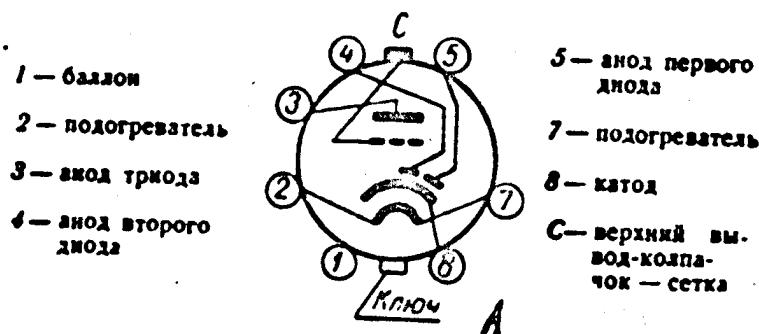
Maximum weight

45 grams

Base — octal, Tsl-1-7A

Lead cap — VK2-3

Dimension drawing — 3M

Connection Diagram for Electrodes and Pins

- 1) Envelope; 2) heater; 3) triode plate; 4) second-diode plate;
5) first-diode plate; 7) heater; 8) cathode; C) top lead-cap — grid;
A) Key.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	300 ± 25 ma
Triode plate voltage (=)	250 v
Grid voltage (=)	-3 v
Plate current for each diode*	no less than 0.8 ma
Triode plate current	1.4 ± 0.8 ma
Triode transconductance	1.3 ^{+0.3} _{-0.35} ma/v ←
Triode transconductance for heater voltage of 5.7 v	no less than 0.85 ma/v
Amplification factor	70 ± 15
Internal resistance	58 kohm
Grid back current	no more than 1.0 µa
Triode-section cathode emission current**	no less than 30 ma

*For diode plate voltage of 10 v and 0 volts on remaining electrodes.

**For plate and grid voltages of 30 v.

← Change and addition introduced.

(Above material published April 1959, PKB, Sheet 1)

DUAL DIODE-TRIODE

6G7

(Common Cathode)

Leakage current between cathode and heater	no more than 20 μ a
Cathode warm-up time	20 sec
Grid insulation resistance	no less than 20 megohms
Plate insulation resistance	no less than 20 megohms
Service life	500 hours
Service-life criteria:	
plate current for 1 diode*	no less than 0.3 ma
triode plate current	no less than 0.48 ma
triode transconductance	no less than 0.8 ma/v

*For diode plate voltage of 10 v and 0 volts on remaining electrodes.

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	7.0 v
Minimum heater voltage ($\sim$ or $=$)	5.7 v
Maximum triode plate voltage ($=$)	300 v
Maximum average rectified current for each diode	1 ma
Maximum plate power dissipation	1 watt
Maximum voltage between cathode and heater ($=$)	100 v

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

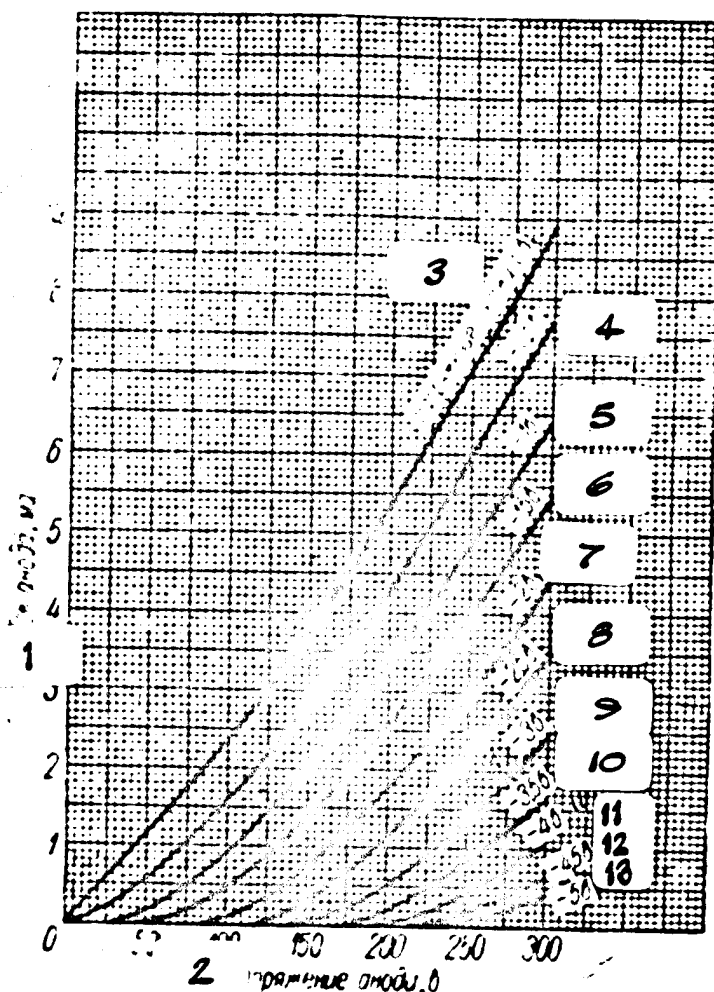
DUAL DIODE-TRIODE

6G7

(Common Cathode)

Average Plate Curves

Heater voltage, 6.3 v.



- 1) Plate current, ma; 2) plate voltage, v; 3) grid voltage, 0 v;
 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) -2 v; 8) -2.5 v; 9) -3 v;
 10) -3.5 v; 11) -4 v; 12) -4.5 v; 13) -5 v.

(Above material published April 1959, PKB, G-1)

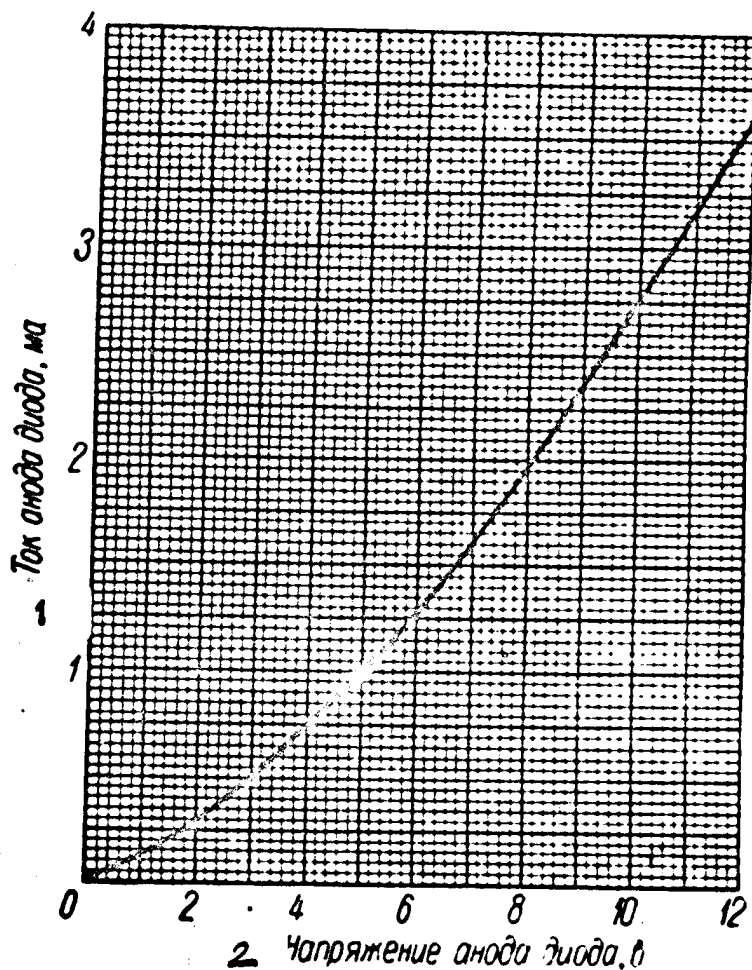
DUAL DIODE-TRIODE

6G7

(Common Cathode)

Average Diode Plate Curve

Heater voltage, 6.3 v.



1) Diode plate current, ma; 2) diode plate voltage, v.

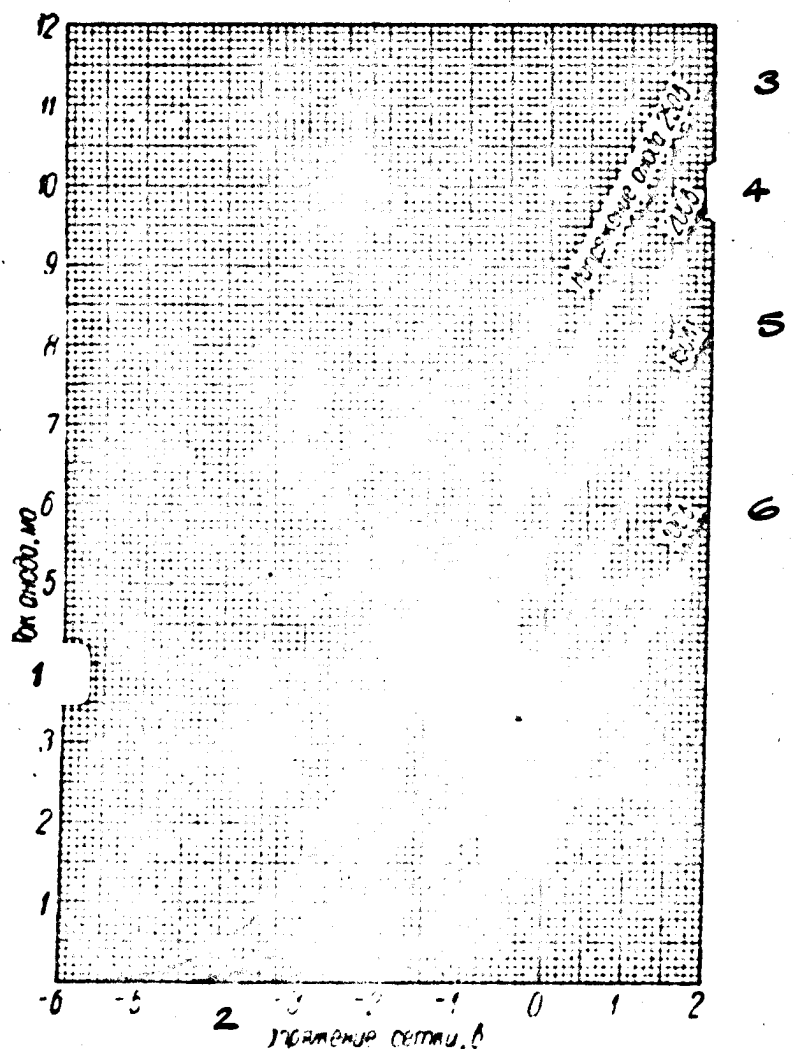
(Above material published April 1959, G-3)

DUAL DIODE-TRIODE
(Common Cathode)

6G7

Average Plate-Grid Curves

Heater voltage, 6.3 v.



- 1) Plate current, ma; 2) grid voltage, v; 3) plate voltage, 250 v;
4) 200 v; 5) 150 v; 6) 100 v.

(Above material published April 1959, PKB, G-2)

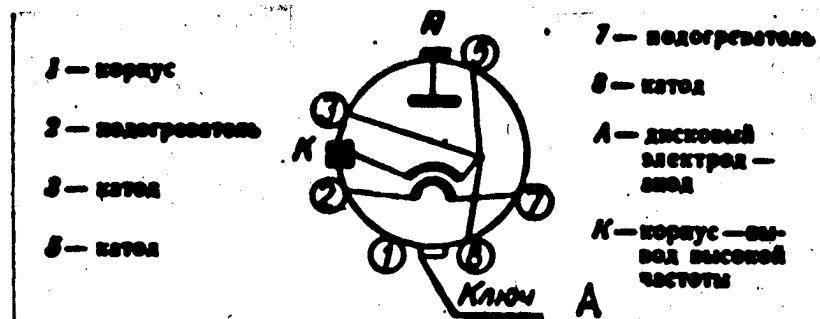
MICROWAVE DIODE

6D3D

Basic function detection of microwave signals.Construction glass with disk leads.General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Maximum weight
 Base — octal, Tsl-1-6A
 Dimension drawing — 4D

50 mm
 33 mm
 35 grams

Connection Diagram for Electrodes and Pins

1) Housing; 2) heater; 3) cathode; 5) cathode; 7) heater; 8) cathode;
 A) Disk electrode — plate; K) Housing — radio-frequency lead; B) Key.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	775 ± 75 ma
Plate voltage*	no more than 7 v
Plate-cathode voltage drop**	no more than 45 v
Leakage current between cathode and heater	no more than 50 μa
Service life	500 hours
Service-life criterion: plate voltage*	no more than 8.4 v

*For plate current of 27 ma.

**Working as a rectifier, with a peak plate current of 150 ma.

(Above material published April 1959, PKB, Sheet 1)

MICROWAVE DIODE

6D3D

Interelectrode CapacitancesPlate-cathode
Cathode-housingno more than 2.8 μf
87.5 $\pm$ 62.5 μf Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	6.6 v
Minimum heater voltage ($\sim$ or $=$)	6 v
Maximum peak inverse voltage	200 v
Maximum peak plate current	150 ma
Maximum mean plate current	27 ma
Maximum voltage between cathode and heater ($=$)	90 v
Maximum envelope temperature	150°C

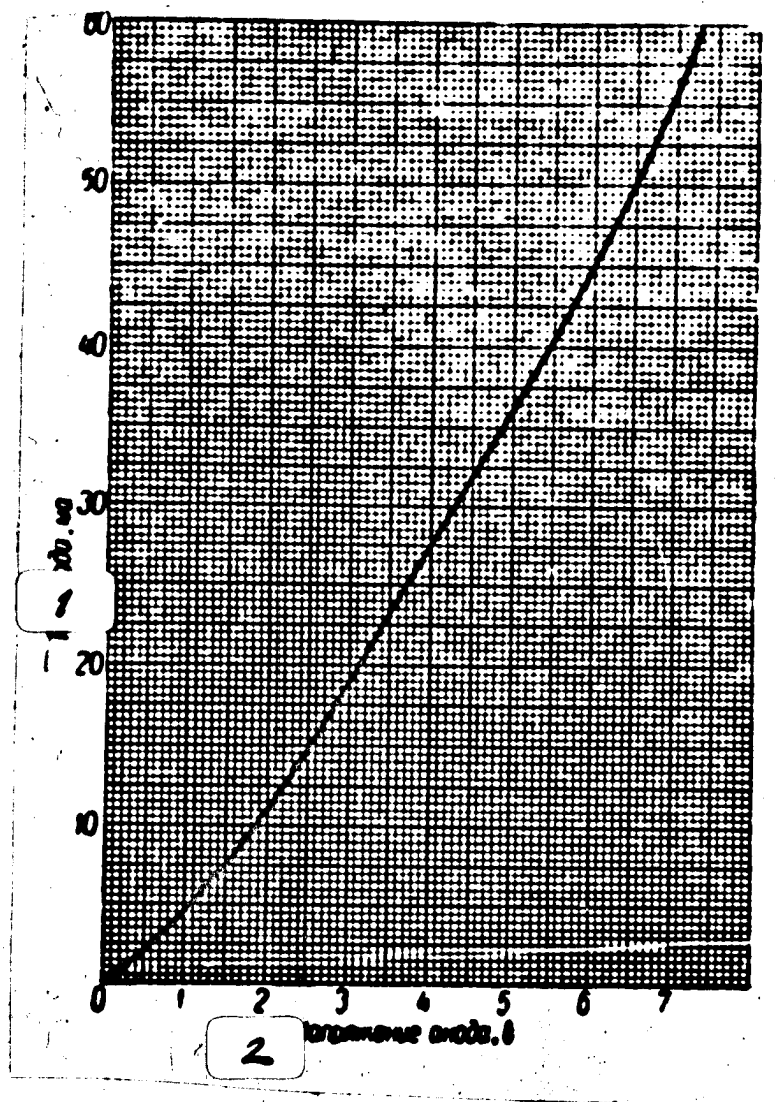
(Above material published April 1959, PKB, Sheet 1)

MICROWAVE DIODE

6D3D

Average Plate Characteristics

Heater voltage, 6.3 v.



1) Plate current, ma; 2) plate voltage, v.

(Above material published April 1959, PKB, G-1)

DIODE

6D4Zh

Basic function detector.Construction glass, "acorn" type.General Data

Cathode — oxide-coated heater-type

Maximum height

Maximum diameter

Maximum weight

Number of pins

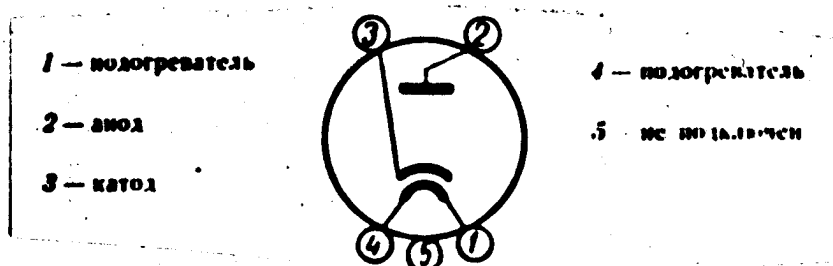
Dimension drawing — 1Zh

35 mm

29.4 mm

12 grams

5

Connection Diagram for Electrodes and Pins

1) Heater; 2) plate; 3) cathode; 4) heater; 5) not connected.

Electrical Data

Heater voltage (~ or =)

Heater current

Initial plate current

Cathode emission current*

Rectified current

Rectified current for heater voltage
of 5.5 v

Input resistance of cold tube

Cathode warm-up time

Leakage current between cathode and
heater

Plate insulation resistance

Service life

Service-life criterion:

rectified current

*For plate voltage of 10 v.

6.3 v

150 ± 10 ma

From 1 to 70 μa

no less than 20 ma

no less than 4.8 ma

no less than 4 ma

no less than 50 kohm

no more than 20 sec

no more than 20 μa

no less than 20 megohms

500 hours

no less than 4.4 ma

(Above material published April 1959, PKB, Sheet 1)

DIODE

6D4Zh

Interelectrode Capacitances

Input

 $1.91 \pm 0.33 \mu\text{f}$ Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	6.9 v
Minimum heater voltage ($\sim$ or $=$)	5.7 v
Maximum alternating plate voltage	130 v (eff)
Maximum peak inverse voltage	365 v
Maximum mean rectified current ($=$)	5 ma
Maximum peak plate current	30 ma
Maximum plate-current deviation	100 ma
Maximum voltage between cathode and heater ($=$)	100 v

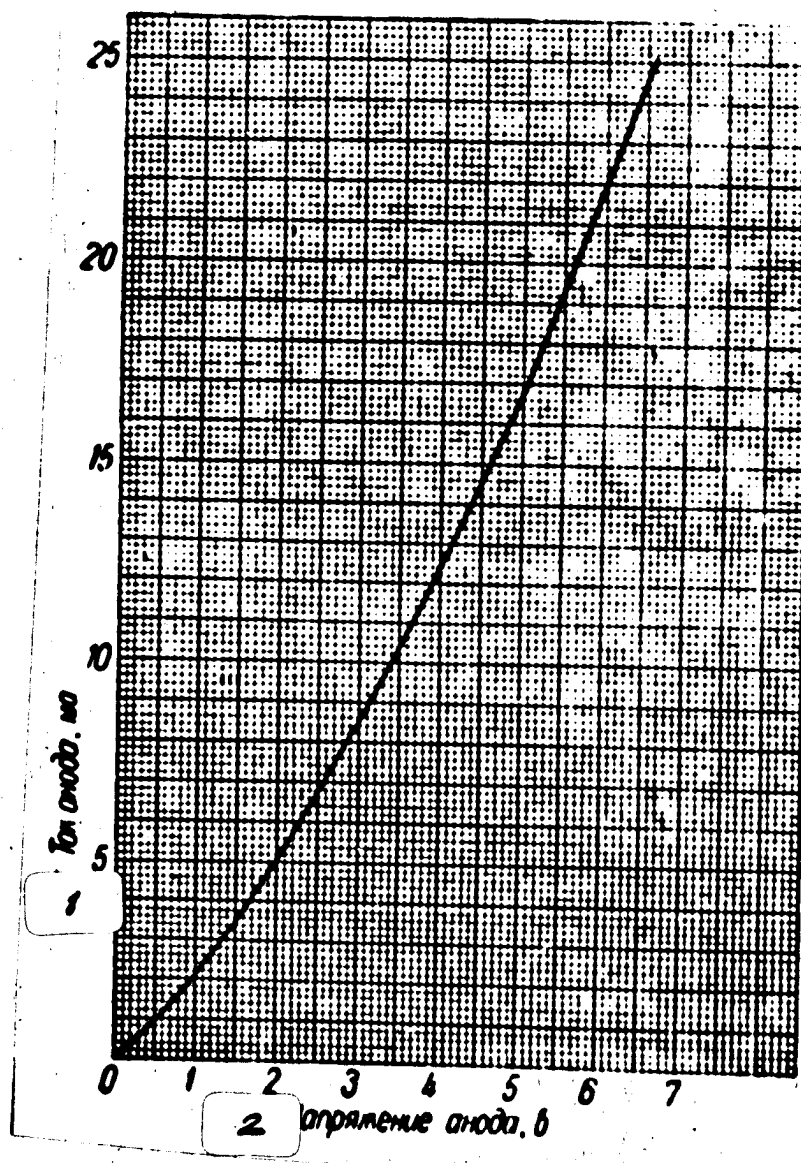
(Above material published April 1959, PKB, Sheet 1)

DIODE

6D4Zh

Average Plate Curve

Heater voltage, 6.3 v.



1) Plate current, ma; 2) plate voltage, v.

(Above material published April 1959, PKB, G-1)

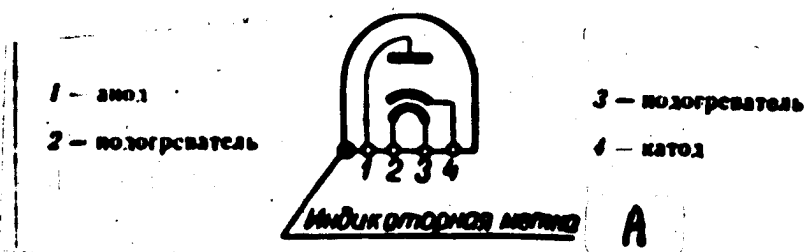
DIODE

6D6A

Basic function detection.Construction glass subminiature.General Data

Cathode — oxide-coated heater-type
 Maximum height (without leads)
 Maximum diameter
 Number of leads
 Length of leads
 Lead diameter
 Maximum weight
 Dimension drawing — 3B

36 mm
 7.2 mm
 4
 about 40 mm
 about 0.4 mm
 2.5 grams

Connection Diagram for Electrodes and Leads

1) Plate; 2) heater; 3) heater; 4) cathode; A) Indicator dot.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	150 ± 15 ma
Alternating plate voltage	165 v (eff)
Load resistance in plate circuit	22 kohm
Filter capacitance (in parallel with load)	8 μf
Initial plate current*	no more than 20 μa
Cathode emission current**	no less than 35 ma
Rectified current***	no less than 8 ma
Leakage current between cathode and heater	no more than 20 μa

*For 40 kohm load resistance and 0 plate voltage.

**For plate voltage of 10 v.

***The total pure resistance in the circuit to the rectified current (without the load resistance in the plate circuit), including the transformer primary resistance appearing in the secondary circuit and the transformer resistance should lie within the 150-200 ohm range.

(Above material published April 1959, PKB, Sheet 1)

DIODE

6D6A

Insulation resistance*
 Service life
 Service-life criterion:
 rectified current

no less than 100 megohms
 500 hours

no less than 7 ma

*For plate voltage of -240 v.

Interelectrode Capacitances*

Plate-cathode**
 Cathode-heater

$3 \pm 0.7 \mu\text{f}$
 $3.5 \mu\text{f}$

*Measured within shield.

**With heater grounded.

Maximum Permissible Operating Data

Maximum heater voltage, intermittent fluctuations (~ or =)	6.6 v
Minimum heater voltage, intermittent fluctuations (~ or =)	6 v
Maximum heater voltage (with a decrease in service life to 100 hours) (~ or =)	6.9 v
Minimum heater voltage (with a decrease in service life to 100 hours) (~ or =)	5.7 v
Maximum inverse plate voltage	450 v
Maximum rectified current	10 ma
Maximum current pulse in rectifier operation	70 ma
Maximum plate power dissipation	0.2 watt
Maximum voltage between cathode and heater (=)	165 v
Resonant frequency	about 700 Mc
Maximum envelope temperature	170°C

(Above material published April 1959, PKB, Sheet 1)

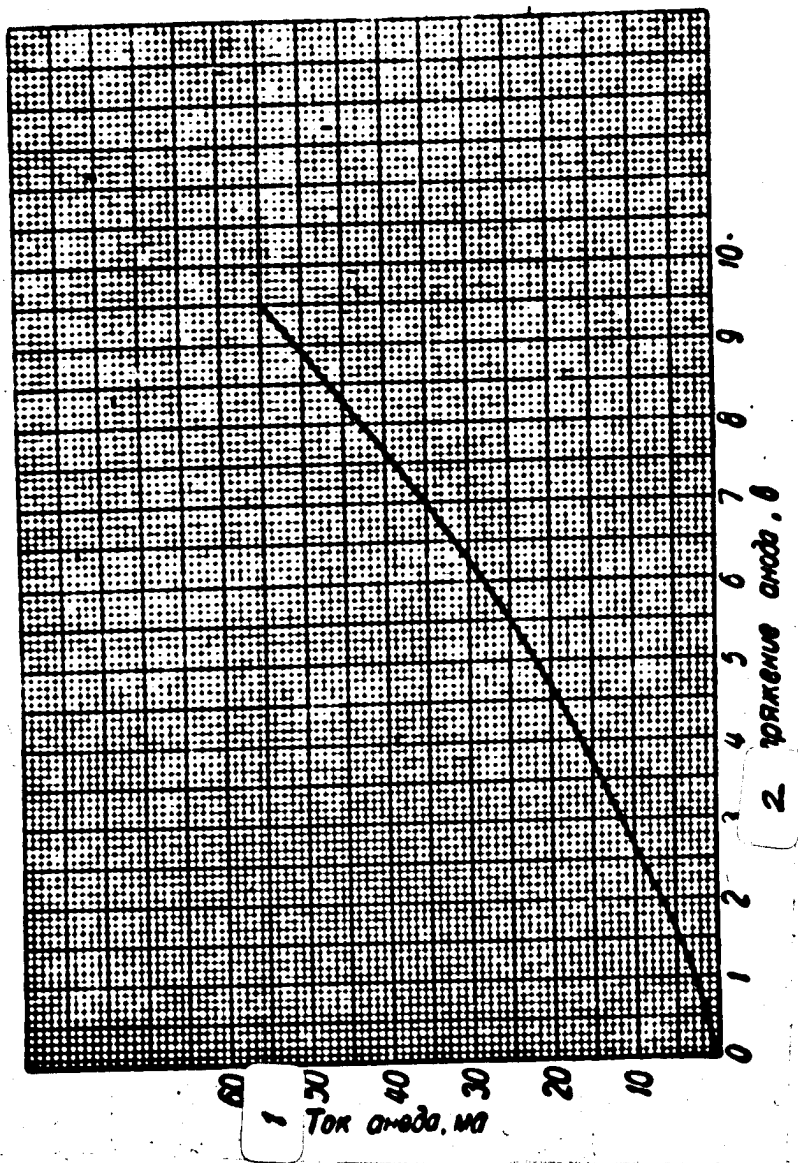
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DIODE

6D6A

Average Plate Curve

Heater voltage, 6.3 v.



1) Plate current, ma; 2) plate current, v.

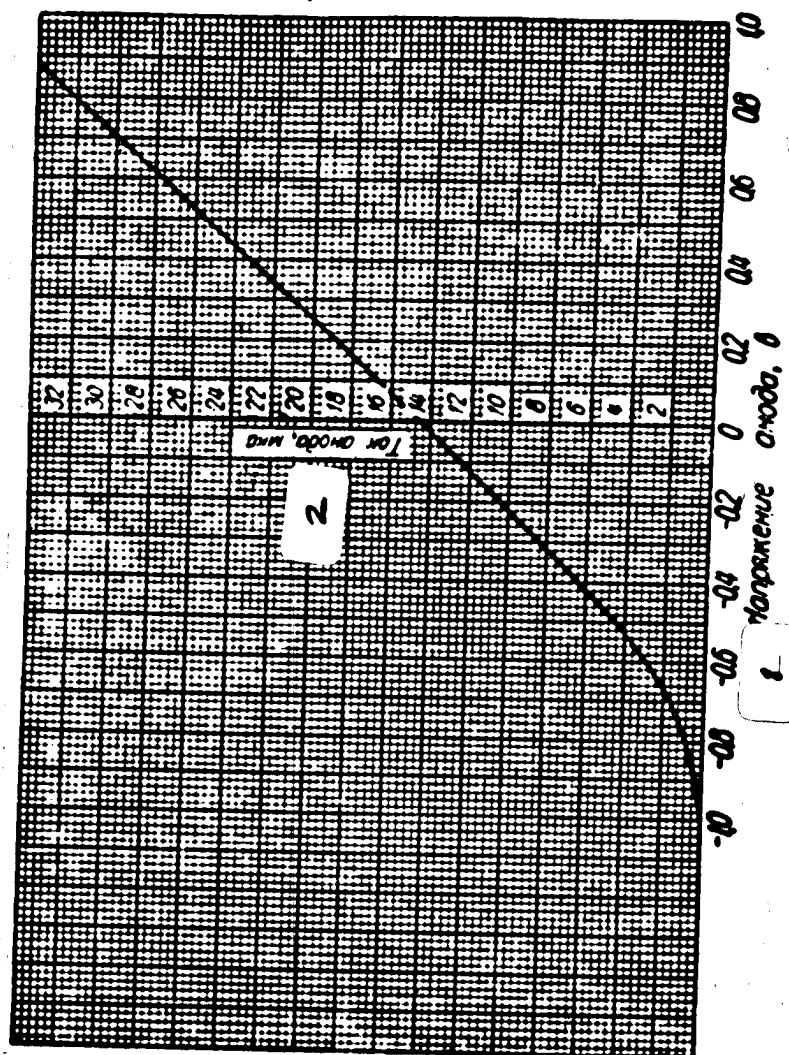
(Above material published April 1959, PKB, G-1)

DIODE

6D6A

Average Initial Plate Curve

Heater voltage, 6.3 v.

1) Plate voltage, v; 2) plate current, μ a.

(Above material published April 1959, PKB, G-2)

VIBRATION-RESISTANT DIODE

6D6A-V

Basic function detection.Construction glass subminiature.General Data

Cathode — oxide-coated heater-type	
Maximum height (without leads)	36 mm
Maximum diameter	7.2 mm
Number of leads	4
Length of leads	about 40 mm
Lead diameter	about 0.4 mm
Maximum weight	2.5 grams
Dimension drawing — 3B	

Connection Diagram for Electrodes and Leads

1) Plate; 2) heater; 3) heater; 4) cathode; A) Indicator dot.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	150 ± 15 ma
Alternating plate voltage	165 v (eff)
Load resistance in plate circuit	22 kohm
Filter capacitance (in parallel with load)	8 μf
Initial plate current*	no more than 20 μa
Cathode emission current**	no less than 35 ma
Rectified current***	no less than 8 ma
Leakage current between cathode and heater****	no more than 20 μa
Vibration-noise voltage	no more than 30 mv (eff)
Insulation resistance*****	no less than 100 megohm

*For load resistance of 40 kohm and plate voltage of 0.

**For plate voltage of 10 v.

***Total pure circuit resistance for rectified current (without load resistance in plate circuit), including transformer primary resistance appearing in secondary circuit and transformer resistance, should lie within the 150-200-ohm range.

****For voltage between cathode and heater of ± 250 v.

*****For plate voltage of -240 v.

(Above material published April 1959, PKB, Sheet 1)

VIBRATION-RESISTANT DIODE

6D6A-V

Service life	500 hours
Service-life criterion:	
rectified current	no less than 7 ma
Stable operating time	no less than 100 hours
Stable-operation criteria:	
rectified current	no less than 7 ma
Variation in rectified current from initial value	no more than 20%

Interelectrode Capacitances*

Plate-cathode	$3 \pm 0.7 \mu\text{f}$
Cathode-heater	$3.5^{+1.5}_{-1} \mu\text{f}$

*Measured within shield.

Maximum Permissible Operating Data

Maximum heater voltage, intermittent fluctuations (~ or =)	6.6 v
Minimum heater voltage, intermittent fluctuations (~ or =)	6 v
Maximum heater voltage with decrease in service life to 100 hours (~ or =)	6.9 v
Minimum filament voltage with decrease in service life to 100 hours (~ or =)	5.7 v
Maximum inverse voltage	450 v
Maximum rectified current	10 ma
Maximum plate pulse current*	70 ma
Maximum plate power dissipation	0.2 watt
Maximum voltage between cathode and heater (=)	165 v
Cathode warm-up time	15 sec
Resonant frequency	about 700 Mc
Maximum envelope temperature	+170°C

*In rectifier operation.

Stability Under External Effects

Stable operating time at ambient temperature of +100°C	no less than 98 hours
Maximum envelope temperature over a 100-hour period at ambient temperature of not more than 100°C	+200°C
Stable operating time at ambient temperature of +200°C	no less than 2 hours
Maximum envelope temperature over 2-hour period at ambient temperature of not more than +200°C	+250°C

(Above material published April 1959, PKB, Sheet 1)

VIBRATION-RESISTANT DIODE

6D6A-V

Minimum ambient temperature	-70°C
Minimum atmospheric pressure	5 mm Hg
Maximum relative humidity at ambient temperature of +50°C	98%
Maximum acceleration under shock conditions (10 shocks lasting 1 msec each)	500 g
Maximum constant acceleration	100 g
Long-term vibration*:	
for 6-g acceleration	80 hours
for 10-g acceleration	20 hours
Criterion of suitability for extended vibration:	
transconductance	no less than 3.2 ma
Frequency range over which there are no mechanical resonances in the tube structure	from 20 to 500 cps
Cathode warm-up time at ambient temperature of -70°C	1 min
*At frequency of 50 cps.	

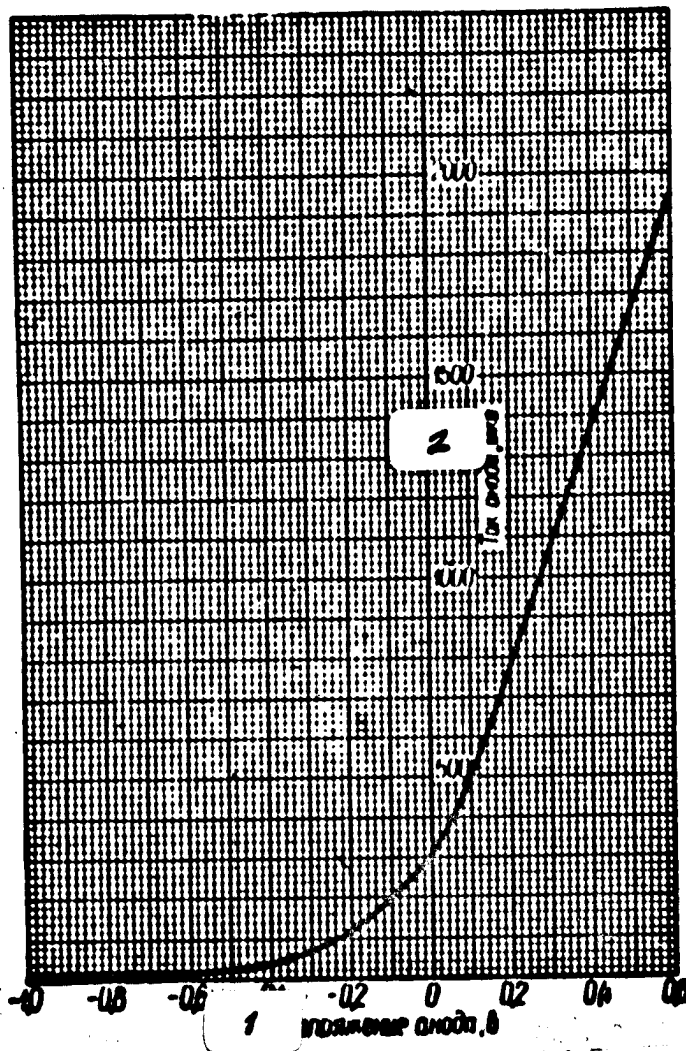
(Above material published April 1959, PKB, Sheet 2)

VIBRATION-RESISTANT DIODE

6D6A-V

Average Plate Curve

Heater voltage, 6.3 v.

1) Plate voltage, v; 2) plate current, μ a.

(Above material published April 1959, PKB, G-1)

MULTIPLIER DIODE

6D10D

50X1-HUM

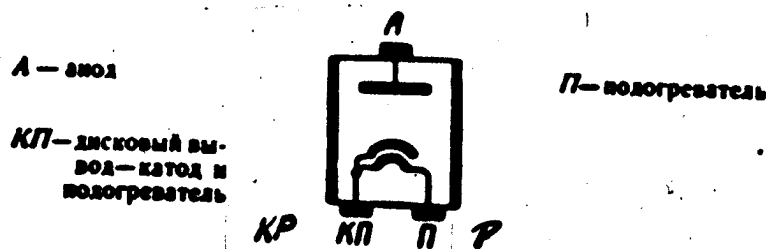
Basic function frequency multiplication in the decimeter and top part of centimeter bands.

Construction glass, with disk-type cathode lead.

General Data

Cathode — oxide-coated heater-type
Maximum height
Maximum diameter
Maximum weight
Dimension drawing — 1D

40 mm
20.2 mm
9 grams

Connection Diagram for Electrodes and Leads

A) Plate; KP) disk lead — cathode and heater; P) heater.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	0.75 + 0.1 amp
Transconductance*	no less than 1.8 $\mu\text{a/v}$
Plate-current cut-off voltage**	from -1.5 to 0 v
Cathode emission current***	30 ma
Plate-cathode leakage current	no more than 0.2 μa
Stability	50 hours
Stability criterion:	
variation in rectified current from	
initial value	no more than $\pm 10\%$

*On section corresponding to plate current from 0.1 to 1 μa .

**For plate current of 0.3 μa .

***For plate voltage of not more than 10 v.

Interelectrode Capacitances

Plate-cathode no more than 3.5 μmf

(Above material published April 1959, PKB, Sheet 1)

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MULTIPLIER DIODE

6D10D

50X1-HUM

Maximum Permissible Operating Data

Maximum heater voltage {~ or =}	7 v
Minimum heater voltage {~ or =}	5.7 v
Maximum peak inverse plate voltage	100 v
Maximum mean rectified current	10 ma
Maximum peak plate current	30 ma
Maximum plate power dissipation	0.5 watt
Maximum permissible envelope temperature	120°C

(Above material published April 1959, PKB, Sheet 1)

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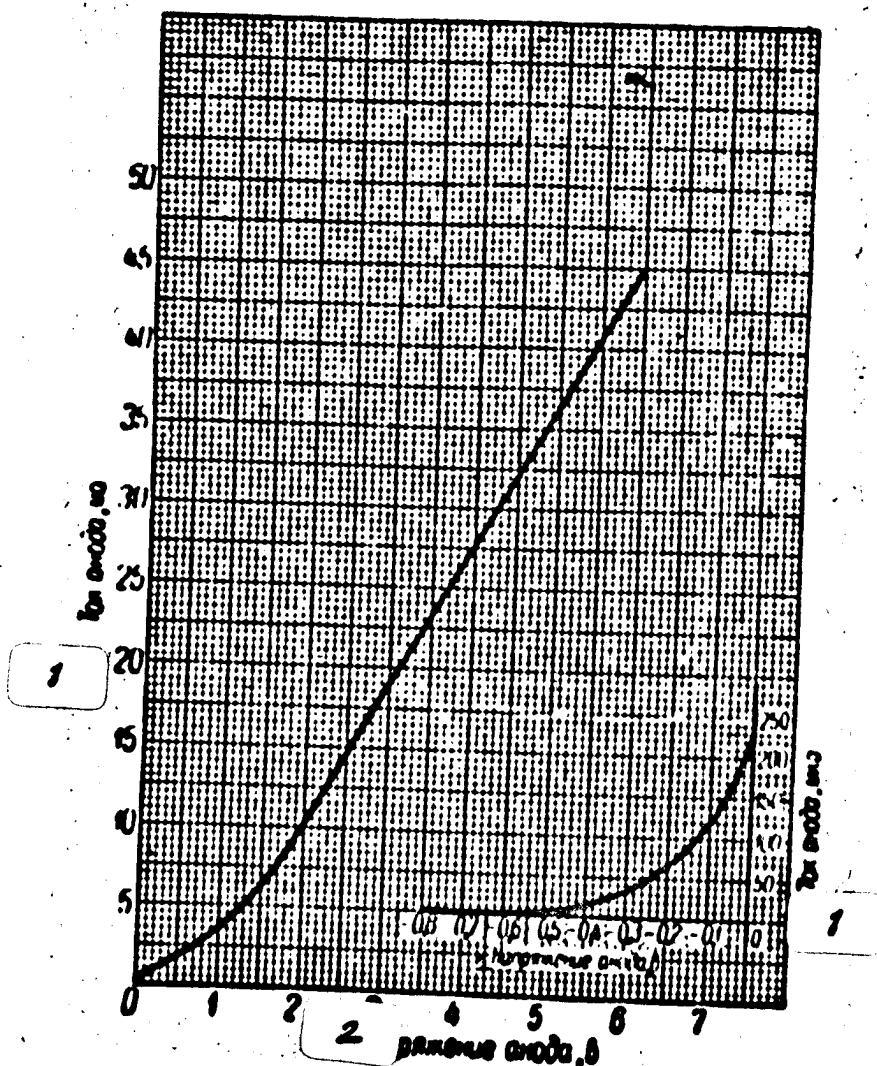
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MULTIPLIER DIODE

6D10D 50X1-HUM

Average Plate Curve

Heater voltage, 6.3 v.



1) Plate current, ma; 2) plate voltage, v.

(Above material published April 1959, PKB, G-1)

50X1-HUM

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TUNING INDICATOR

6YelP 50X1-HUM

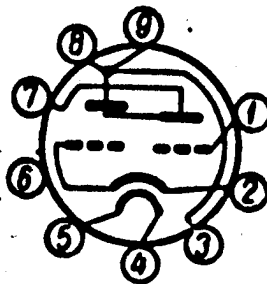
Basic function tuning indicator.Construction glass miniature.General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Number of pins
 Maximum weight
 Dimension drawing — 17P

72 mm
 22.5 mm
 9
 20 grams

Connection Diagram for Electrodes and Pins

1 — сетка
 2 — катод и сетка
 3 — анод кратера
 4 — подогреватель
 5 — подогреватель



6 — не подключен
 7 — анод и фокусирующий электрод
 8 — анод кратера
 9 — анод кратера

- 1) Grid; 2) cathode and target grid; 3) target plate; 4) heater;
 5) heater; 6) not connected; 7) plate and focusing electrode;
 8) target plate; 9) target plate.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	300 ± 25 ma
Plate voltage (=)	100 v
Target plate voltage (=)	250 v
Grid voltage (=)	-2 v
Plate current	2 ± 1.5 ma
Target plate current	no more than 4 ma
Transconductance	no less than 0.5 ma/v
Amplification factor	24 ± 10
Grid voltage, with edges of bright sector of target touching but not overlapping (=)*	-15 ± 5 v
Grid back current	no more than 0.5 μa

*With 250-v supply voltage for plate and plate target circuits and resistance in plate circuit of 0.5 megohm. There may be a dark band at the borders of contact that is not more than 1 mm wide.

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

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TUNING INDICATOR

6YelP

50X1-HUM

Leakage current between cathode and heater no more than 20 μ a
Service life 500 hours
Service-life criterion:
quality of light from target plate*

*With plate and target-plate power supply voltage of 250 v, plate-circuit resistance of 0.5 megohm, and grid voltage of -20 v.

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	6.9 v
Minimum heater voltage ($\sim$ or $=$)	5.7 v
Maximum plate voltage ($=$)	250 v
Maximum plate voltage connected across cold tube ($=$)	350 v
Maximum target-plate voltage ($=$)	250 v
Minimum target-plate voltage ($=$)	150 v
Maximum target-plate voltage connected across cold tube ($=$)	350 v
Maximum plate power dissipation	0.2 watt
Maximum voltage between cathode and heater ($=$)	100 v
Maximum grid-circuit resistance	3 megohm

(Above material published April 1959, PKB, Sheet 1)

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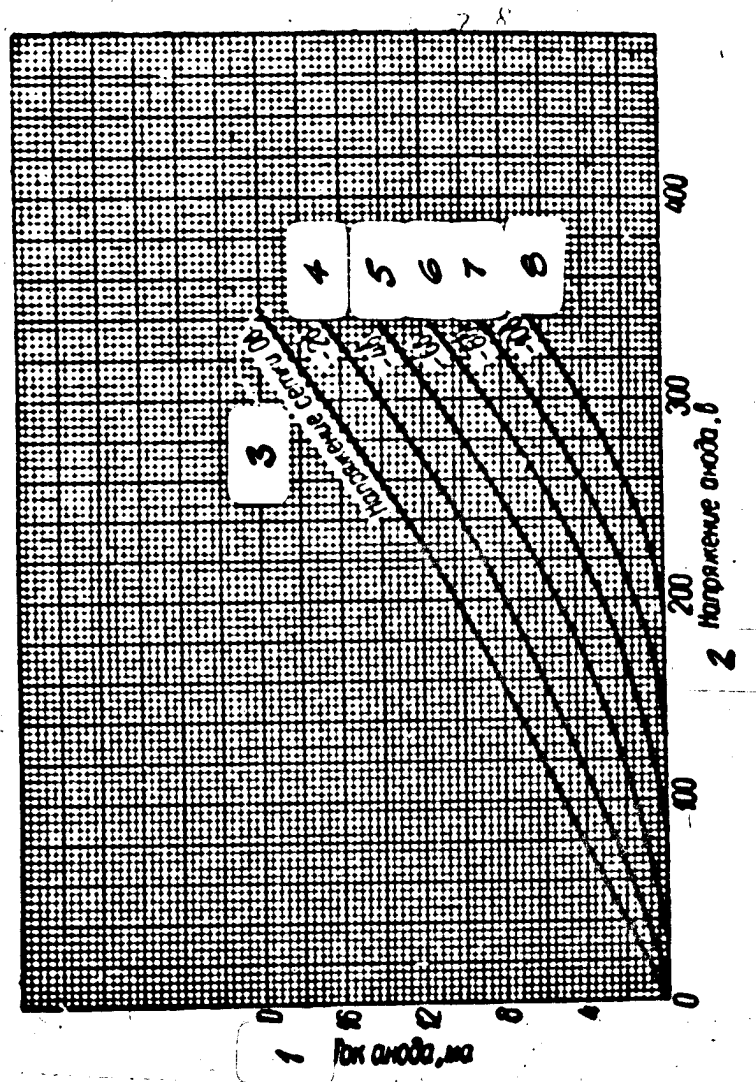
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TUNING INDICATOR

6YelP 50X1-HUM

Average Plate Curves

Heater voltage, 6.3 v; target-plate voltage, 250 v.



- 1) Plate current, 1 ma; 2) plate voltage, v; 3) grid voltage, 0 v;
 4) -2 v; 5) -4 v; 6) -6 v; 7) -8 v; 8) -10 v.

(Above material published April 1959, PKB, G-1)

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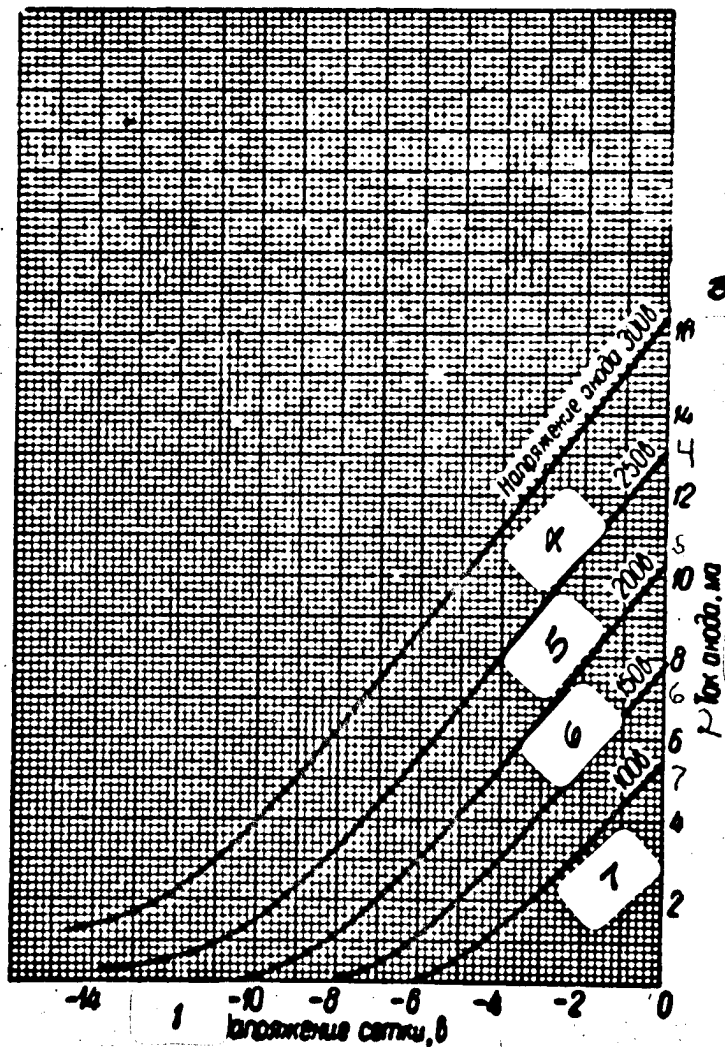
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TUNING INDICATOR

6YelP

Average Plate-Grid Curves

Heater voltage, 6.3 v; target-plate voltage, 250 v.



1) Grid voltage, v; 2) plate current, ma; 3) plate voltage, 300 v;
 4) 250 v; 5) 200 v; 6) 150 v; 7) 100 v.

(Above material published April 1959, PKB, G-2)

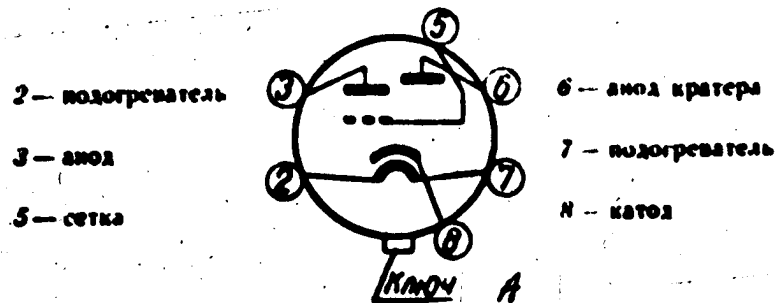
TUNING INDICATOR

6Ye5S

Basic function tuning indicator.Construction glass.General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Maximum weight
 Base — octal, Tsl-4-6V
 Dimension drawing — 4S

101 mm
 32.8 mm
 42 grams

Connection Diagram for Electrodes and Pins

2) Heater; 3) plate; 5) grid; 6) target plate, 7) heater; 8) cathode;
 A) Key.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	300 ± 25 ma
Plate voltage (=)	250 v
Target-plate voltage (=)	250 v
Grid voltage (=)	-4 v
Plate current	5.3 ± 1.9 ma
Target-plate current	no more than 5 ma
Transconductance	1.2 ± 0.4 ma/v
Amplification factor	24 ± 2
Grid voltage at which bright target sectors will touch but not overlap (=)	-7.5 ± 2 v
Grid back current	no more than 2 µa
Leakage current between cathode and heater	no more than 20 µa
Cathode emission current	no less than 15 ma
Grid insulation resistance	no less than 20 megohms
Plate insulation resistance	no less than 20 megohms
Service life	500 hours
Service-life criterion:	
quality of light from target plate	

(Above material published April 1959, PKB, Sheet 1)

TUNING INDICATOR

6Ye5S

Maximum Permissible Operating Data

Maximum heater voltage {~ or =}	6.9 v
Minimum heater voltage {~ or =}	5.7 v
Maximum plate operating voltage (=)	250 v
Maximum target-plate operating voltage (=)	250 v
Maximum plate and target plate voltages at instant of turn-on	350 v

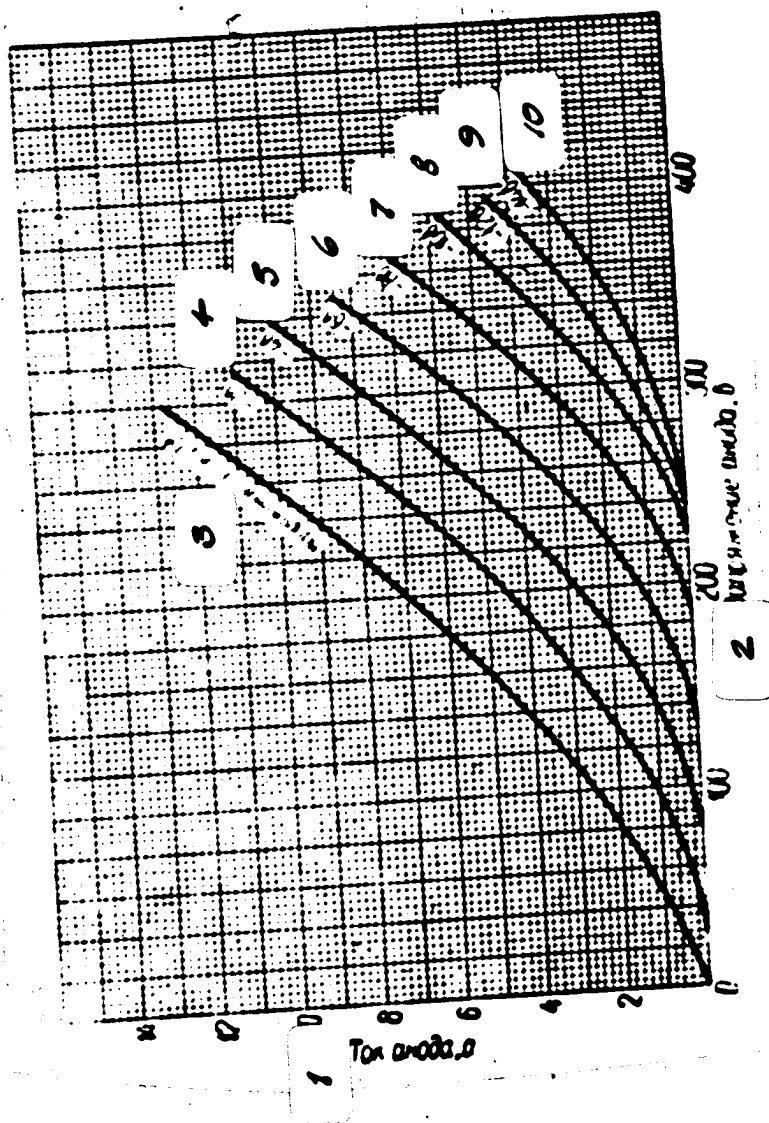
(Above material published April 1959, PKB, Sheet 1)

TUNING INDICATOR

6Ye5S

Average Plate Curves

Heater voltage, 6.3 v; target-plate voltage, 250 v.



- 1) Plate current, amp; 2) plate voltage, v; 3) grid voltage, 0 v;
 4) -2 v; 5) -4 v; 6) -6 v; 7) -8 v; 8) -10 v; 9) -12 v; 10) -14 v.

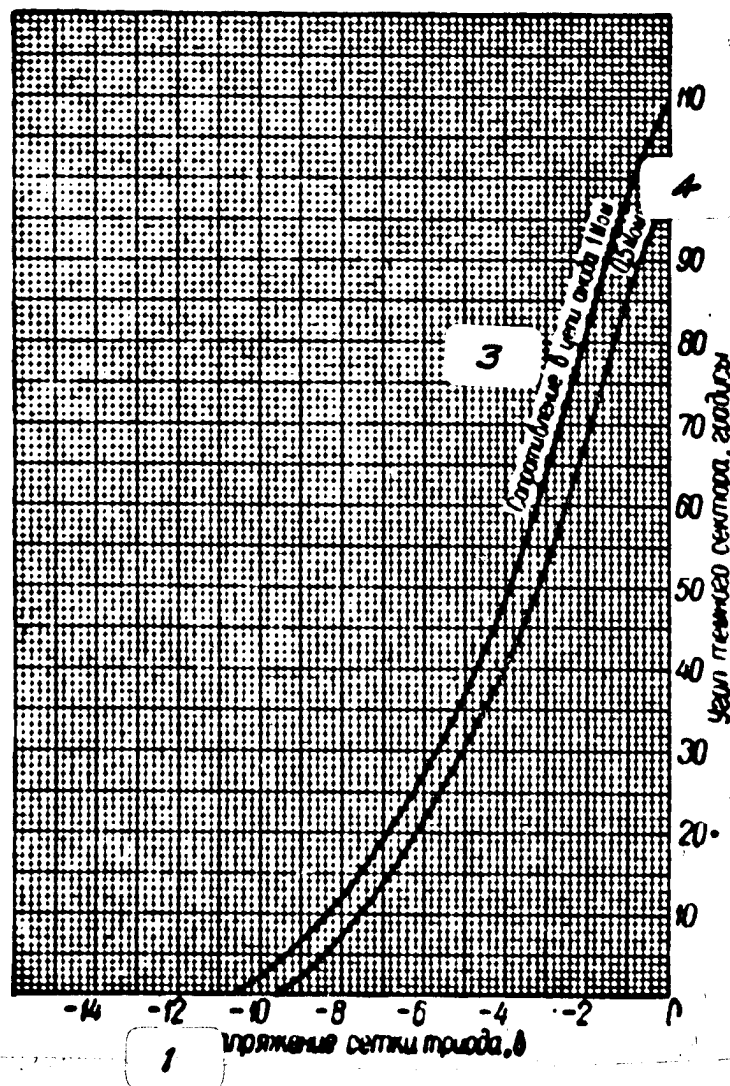
(Above material published April 1959, PKB, G-1)

TUNING INDICATOR

6Ye5S

Average Curves for Target Dark-Sector Angle as a Function of Triode Grid Voltage

Heater voltage, 6.3 v; plate supply voltage, 250 v; target-plate voltage, 250 v.



1) Triode grid voltage, v; 2) dark-sector angle, degrees; 3) resistance in plate circuit, 1 megohm; 4) 0.5 megohm.

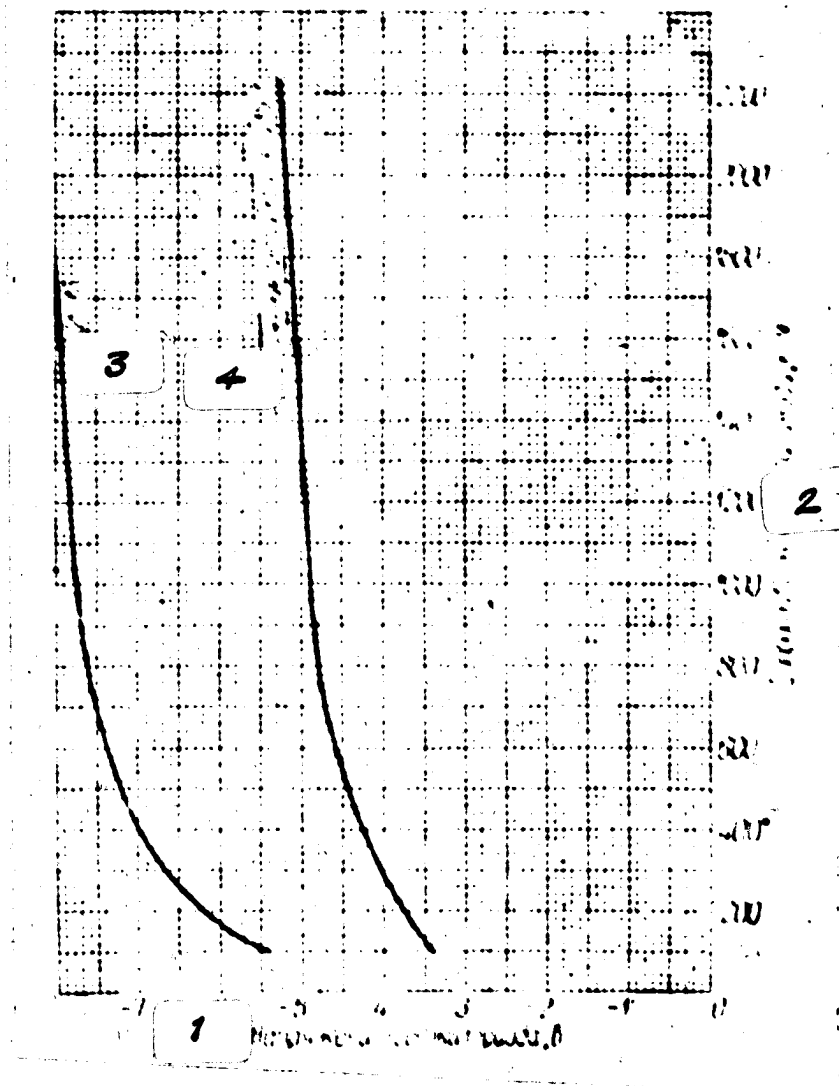
(Above material published April 1959, PKB, G-3)

TUNING INDICATOR

6Ye5S

Average Curves for Convergence of Edges of Target Dark Sector as a Function of Value of Plate Load Resistance and Triode Grid Voltage

Heater voltage, 6.3 v; dark-sector angle, 0° ; plate supply voltage equal to target-plate voltage.



- 1) Triode grid voltage, v; 2) resistance in plate circuit, kohm;
 3) 250 v; 4) target-plate voltage 150 v.

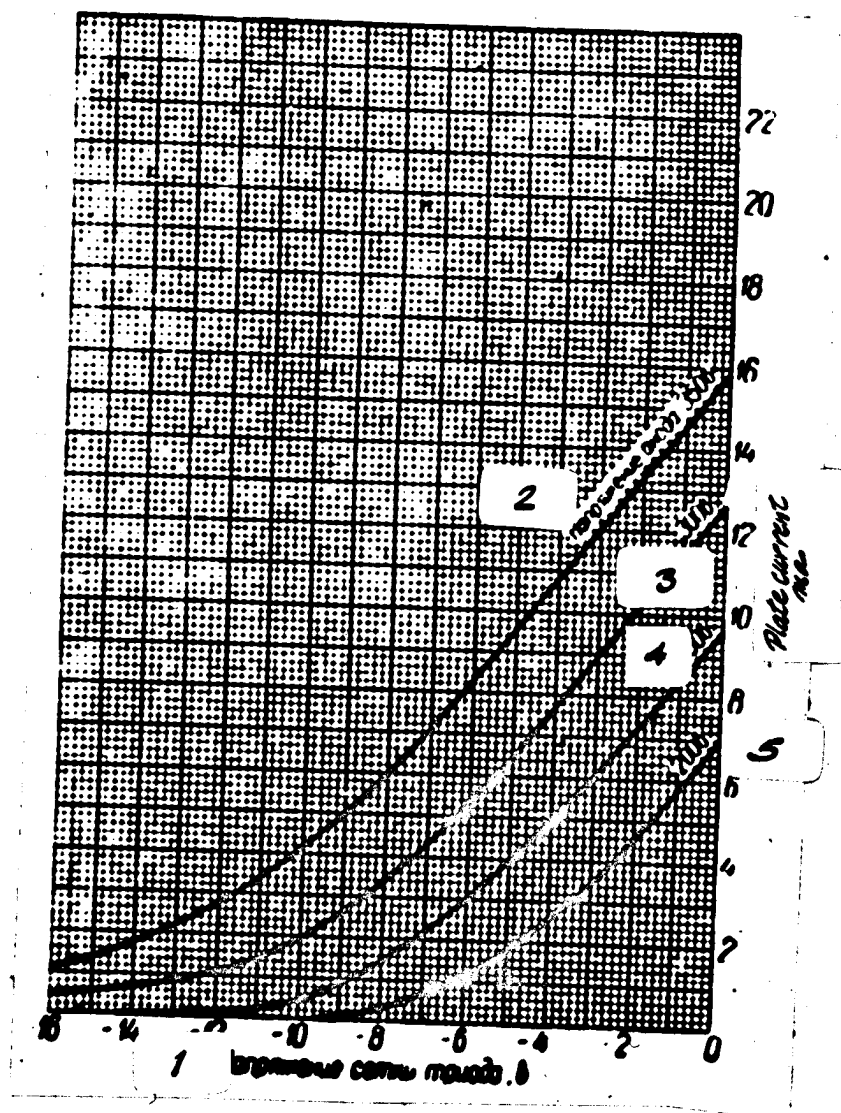
(Above material published April 1959, PKB, G-5)

TUNING INDICATOR

6Ye5S

Average Plate-Grid Curves

Heater voltage, 6.3 v; target-plate voltage, 250 v.



- 1) Triode grid voltage, v; 2) plate voltage, 350 v; 3) 300 v;
 4) 250 v; 5) 200 v.

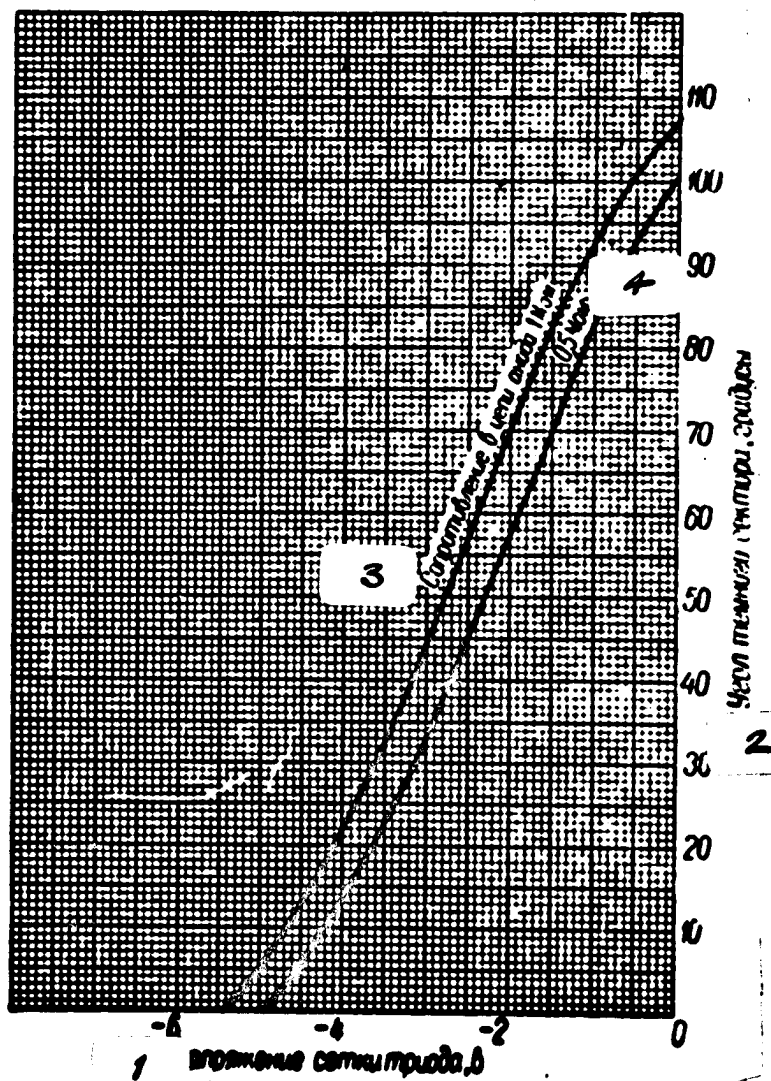
(Above material published April 1959, PKB, G-2)

TUNING INDICATOR

6Ye5S

Average Curves for Target Dark-Sector Angle as a Function of Triode Grid Voltage

Heater voltage, 6.3 v; plate power supply voltage, 150 v;
target-plate voltage, 150 v.



1) Triode grid voltage, v; 2) dark-sector angle, degrees; 3) resistance in plate circuit, 1 megohm; 4) 0.5 megohm.

(Above material published April 1959, PKB, G-4)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh1B

Basic function radio-frequency voltage amplifier.Construction glass subminiature.General Data

Cathode — oxide-coated heater-type	
Maximum height (without leads)	36 mm
Maximum diameter	10.2 mm
Number of leads	7
Lead length	about 40 mm
Lead diameter	about 0.4 mm
Maximum weight	3.5 grams
Dimension drawing — 5B	

Connection Diagram for Electrodes and Leads

- 1) Plate; 2) screen; 3) heater; 4) heater; 5) suppressor; 6) cathode;
7) control grid; A) Indicator dot.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	200 ± 20 ma
Plate voltage (=)	120 v
Screen voltage (=)	120 v
Resistance in cathode circuit, self biasing operation	200 ohms
Plate current	7.5 ± 2.5 ma
Screen current	no more than 3.5 ma
Transconductance	4.8 ± 1.2 ma/v
Transconductance with heater voltage of 5.7 v	no less than 3 ma/v

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh1B

Equivalent internal noise resistance	no more than 4 kohm	←
Input resistance at frequency of 50 Mc	no less than 8 kohm	
First-grid back current	no more than 0.1 μ a	
First-grid thermionic emission current*	no more than 0.1 μ a	
Leakage current between cathode and heater	no more than 20 μ a	
Vibration-noise voltage**	no more than 200 mv (eff)	
First-grid insulation resistance	no less than 100 megohms	
Plate insulation resistance	no less than 100 megohms	
Service life	500 hours	←
Service-life criteria: transconductance	no less than 3 ma/v	
first-grid back current	no more than 0.5 μ a	

*For heater voltage of 7.5 v, first-grid voltage of -2 v, and plate and screen voltages equal to zero.

**For plate load resistance of 10 kohm, at vibration frequency of 50 cps for an amplitude of 1 mm.

Interelectrode Capacitances*

Input	4.8 $\pm$ 0.85 μ mf	
Output	3.8 $\pm$ 0.95 μ mf	
Transfer	no more than 0.03 μ mf	
Cathode-heater	no more than 7 μ mf	←

*Measured within shield.

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	6.9 v	←
Minimum heater voltage ($\sim$ or $=$)	5.7 v	←
Maximum plate voltage ($=$)	150 v	
Maximum plate voltage with tube cut off (plate current no more than 5 μ a) ($=$)	250 v	←
Maximum screen voltage ($=$)	125 v	
Maximum screen voltage with tube cut off (plate current no more than 5 μ a) ($=$)	250 v	←
Maximum plate power dissipation	1.2 watts	
Maximum screen power dissipation	0.4 watt	
Maximum cathode current	14 ma	
Minimum cathode warm-up time	15 sec	
Maximum voltage between cathode and heater ($=$)	150 v	
Maximum first-grid circuit resistance	1 megohm	
Maximum envelope temperature	170°C	

← Change and addition introduced.

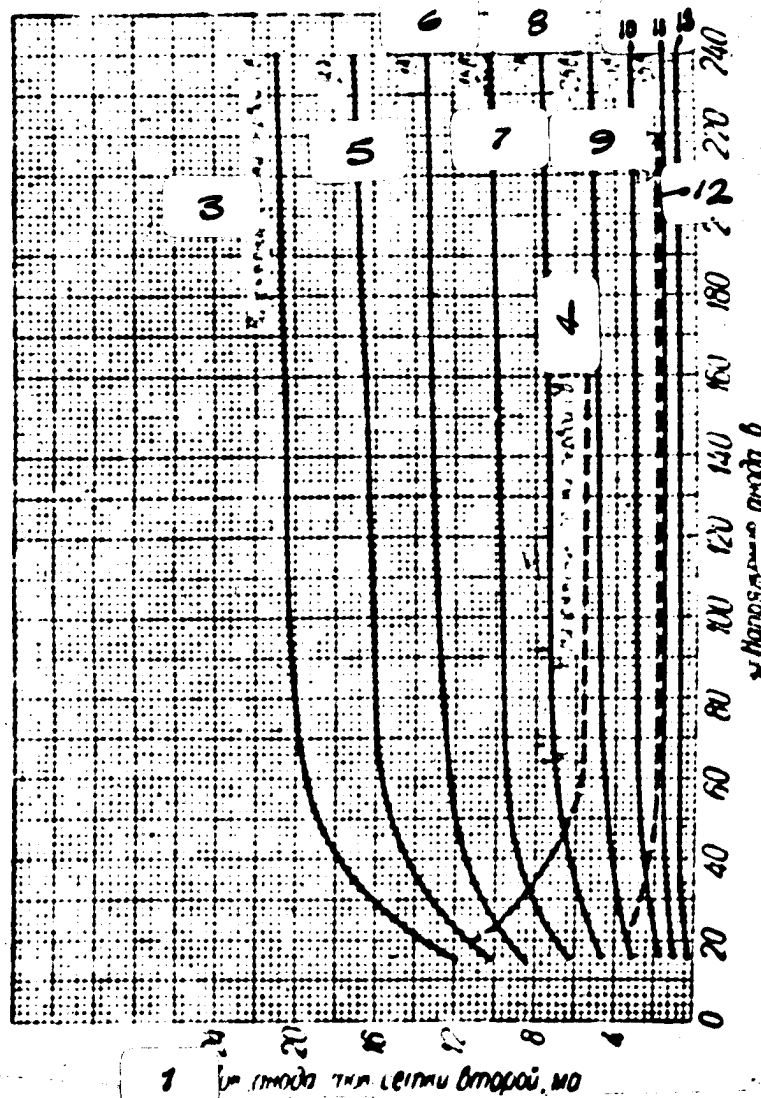
(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh1B

Average Characteristics

———— Plate; ----- grid-plate (for screen grid); heater voltage, 6.3 v; screen voltage, 120 v.



- 1) Plate current, screen current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) first-grid voltage, 0 v; 5) -0.5 v; 6) -1 v; 7) -1.5 v; 8) -2 v; 9) -2.5 v; 10) -3 v; 11) -3.5 v; 12) -2 v; 13) -4 v.

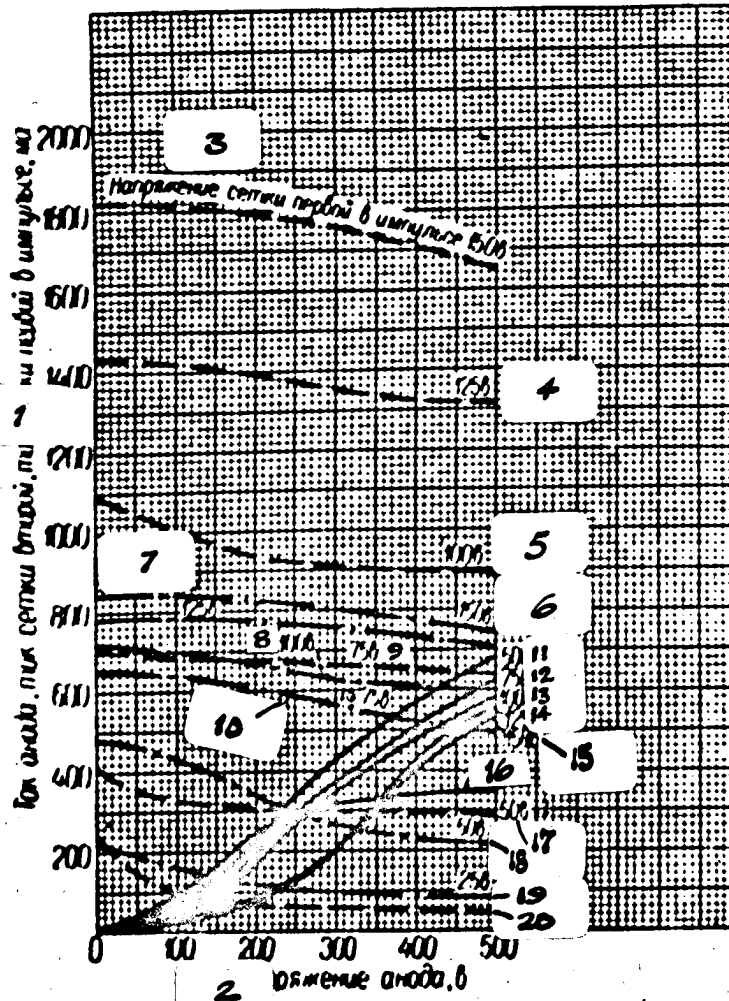
(Above material published April 1959, PKB, G-1)

SHARP-CUTOFF RADIO FREQUENCY PENTODE

6Zh1B

Average Pulse Characteristics

—— Plate; ----- grid-plate; -.-.-.- grid-plate (for screen grid); voltage, 6.3 v [sic]; screen voltage, 120 v; pulse repetition rate, 1 kc; pulse length, 2 μ sec.



- 1) Plate current, screen current, first-grid pulse current, ma;
 2) plate voltage, v; 3) first-grid voltage, pulsed, 150 v; 4) 125 v;
 5) 100 v; 6) 150 v; 7) 125 v; 8) 100 v; 9) 75 v; 10) 75 v; 11) 50 v;
 12) 75 v; 13) 100 v; 14) 125 v; 15) 150 v; 16) 25 v; 17) 50 v;
 18) 50 v; 19) 25 v; 20) 25 v.
 (Above material published April 1959, PKB, G-3)

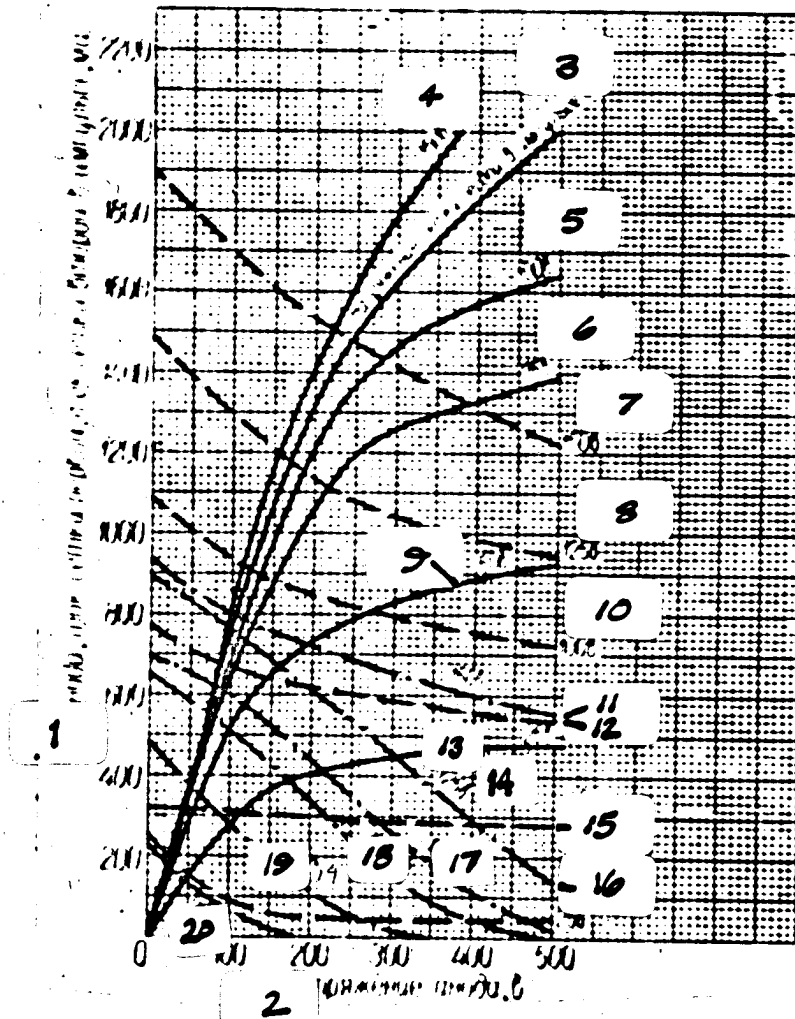
SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh1B

Average Pulse Characteristics

(third grid connected to plate)

— Plate; ----- grid-plate; - - - - - grid-plate (for screen grid);
 heater voltage, 6.3 v; screen voltage, 120 v; pulse repetition rate,
 1 kc; pulse length, 2 μ sec.



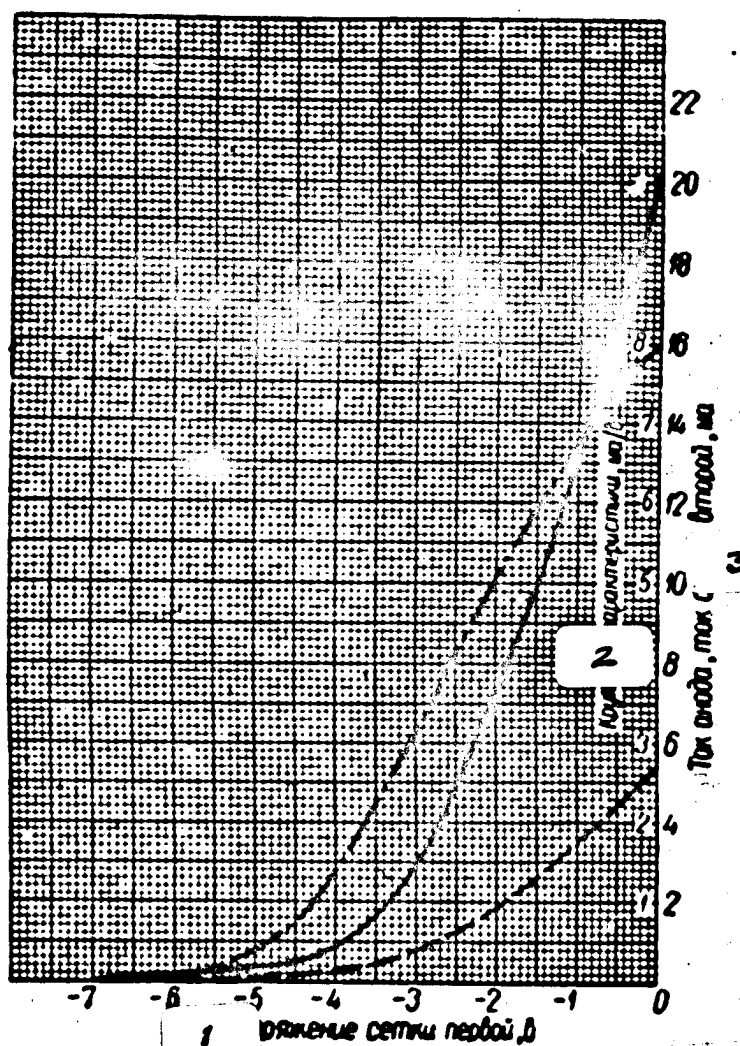
- 1) Plate current, first-grid current, screen current, pulsed, ma;
 2) plate voltage, v; 3) first-grid voltage, pulsed, 125 v; 4) 150 v;
 5) 100 v; 6) 75 v; 7) 150 v; 8) 125 v; 9) 50 v; 10) 100 v; 11) 150 v;
 12) 75 v; 13) 25 v; 14) 125 v; 15) 50 v; 16) 25 v; 17) 100 v; 18) 75 v;
 19) 50 v; 20) 25 v.
 (Above material published April 1959, PKB, G-5)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh1B

Average Characteristics

— Plate-grid; ----- grid (for screen grid); -.-.-.- mutual conductances; heater voltage, 6.3 v; plate voltage, 120 v; screen voltage, 120 v.



- 1) First-grid voltage, v; 2) plate current, screen current, ma;
3) mutual conductance, ma.

(Above material published April 1959, PKB, G-2)

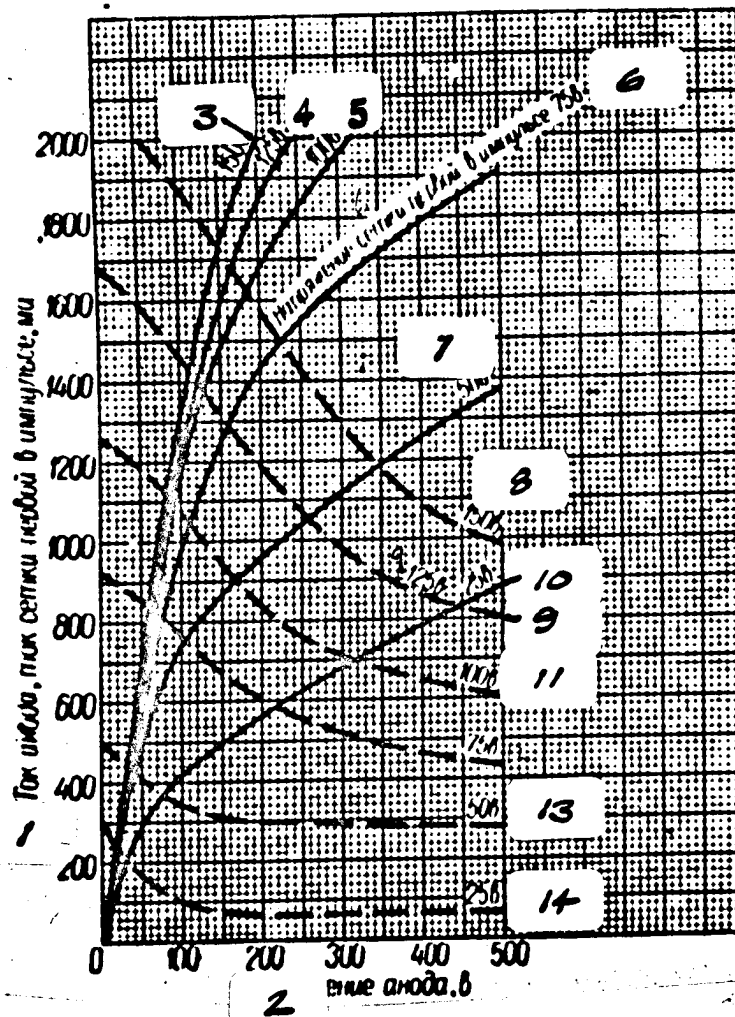
SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh1B

Average Pulse Characteristics

(triode connection)

———— Plate; ----- grid-plate; heater voltage, 6.3 v; screen voltage, 120 v; pulse repetition rate, 1 kc; pulse length, 2 μ sec.



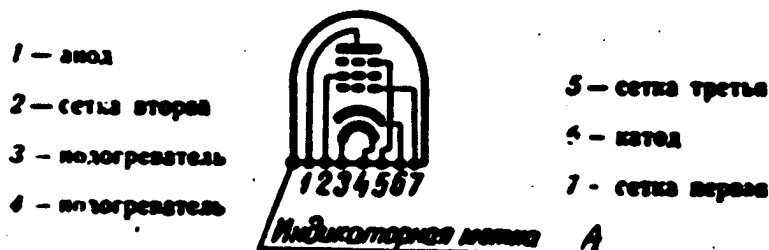
- 1) Plate current, first-grid current, pulsed, ma; 2) plate voltage, v; 3) 150 v; 4) 125 v; 5) 100 v; 6) first-grid voltage, pulsed, 75 v; 7) 50 v; 8) 150 v; 9) 25 v; 10) 25 v; 11) 100 v; 12) 75 v; 13) 50 v; 14) 25 v.

(Above material published April 1959, PKB, G-4)

SHARP-CUTOFF VIBRATION-RESISTANT RADIO-FREQUENCY PENTODE 6Zh1B-V

Basic function radio-frequency voltage amplifier.Construction glass subminiature.General Data

Cathode — oxide-coated heater-type	
Maximum height (without leads)	36 mm
Maximum diameter	10.2 mm
Number of leads	7
Lead length	no less than 40 mm
Lead diameter	about 0.4 mm
Maximum weight	3.5 grams
Dimension drawing — 5B	

Connection Diagram for Electrodes and Leads

- 1) Plate; 2) screen; 3) heater; 4) heater; 5) suppressor; 6) cathode;
7) control grid; A) Indicator dot.

Electrical Data

Heater voltage ($\sim$ or $=$)	6.3 v
Heater current	200 ± 20 ma
Plate voltage ($=$)	120 v
Screen voltage ($=$)	200 v
Resistance in cathode circuit, self biasing	200 ohms
Plate current	7.5 ± 2.5 ma
Plate current for first-grid voltage of -2 v	7.5 ma*
Plate current for first-grid voltage of -10 v	no more than 50 μ a
Screen current	no more than 3.5 ma
Transconductance	5 ± 1.2 ma/v

*Rough value.

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF VIBRATION-RESISTANT RADIO-FREQUENCY PENTODE 6Zh1B-V

[Left-hand side of original Russian copy missing; items followed by
"?" have been identified only tentatively]

Transconductance for heater voltage	no less than 3.2 ma/v
Of 5.7 v	
Transconductance for first-grid voltage	5 ma/v*
of -2 v	0.2 megohm*?
Internal resistance	no more than 1.8 kohm*
Equivalent internal noise resistance	no less than 25 kohm*?
Load resistance at frequency of 50 Mc	
Positive first-grid voltage for plate current	6 v?
of 50 μ a	
First-grid back current	no more than 0.1 μ amp?
First-grid leakage current**	no more than 0.1 μ a?
Leakage current between cathode and heater***	no more than 20 μ a
Vibration-noise voltage****	no more than 180 mv (eff)
Service life	500 hours
Service-life criteria:	
transconductance	no less than 3.2 ma/v
variation in transconductance from initial value	from -40 to +30%?
First-grid back current	no more than 0.5 μ a
Stable operation	no less than 100 hours?
Stable operation criteria:	
transconductance	3.2 ma/v
variation in transconductance from initial value	$\pm 28\%$
First-grid back current	no more than 0.5 μ a

*Rough value.?
 **For heater voltage of 7.5 v, first-grid voltage of -2 v, and plate and screen voltages equal to zero.
 ***With voltage between cathode and heater of ± 250 v.
 ****Across 10-kohm load resistor, with vibration at frequency of 50-cps, acceleration 12 g.?

Interelectrode Capacitances*

Input	4.8 $\pm$ 0.85 μ mf?
Output	3.8 $\pm$ 0.95 μ mf?
Transfer	no more than 0.03 μ mf
?-heater	no more than 5 μ mf

*Measured within shield.

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or =)	6.9 v
Minimum heater voltage ($\sim$ or =)	5.7 v
Maximum plate voltage ($\sim$ or =)	150 v

← Change introduced.?

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF VIBRATION-RESISTANT RADIO-FREQUENCY PENTODE 6Zh1B-V

Maximum plate voltage with tube cut off (plate current no more than 5 μ a) (=)	250 v	
Maximum screen voltage (=)	125 v	
Maximum screen voltage with tube cut off (plate current no more than 5 μ a) (=)	250 v	
Maximum plate power dissipation	1.2 watts	
Maximum screen power dissipation	0.4 watt	
Maximum first-grid power dissipation	0.1 watt	←
Minimum cathode warm-up time	15 sec	
Maximum voltage between cathode and heater (=)	150 v	
Maximum resistance in first-grid circuit	1 megohm	
Maximum envelope temperature	170°C	

Resistance to External Effects

Stable operating time at ambient temperature of +100°C	no less than 98 hours	←
Maximum envelope temperature over 100-hour period at ambient temperature of not more than +100°C	+200°C	←
Stable operating time at ambient temperature of +200°C	no less than 2 hours	
Maximum envelope temperature over 2-hour period for ambient temperature of no more than +200°C	+250°C -70°C	
Minimum ambient temperature		
Cathode warm-up time at ambient temperature of -70°C	1 min	
Minimum atmospheric pressure	5 mm Hg	
Maximum relative humidity at ambient temperature of + 50°C	98%	
Maximum constant acceleration*	100 g	
Maximum shock acceleration (10 shocks lasting 1 msec each)	500 g	
Extended vibration:**		
for 6-g acceleration	80 hours	
for 10-g acceleration	20 hours	
Criterion of suitability for extended-vibration conditions: transconductance	no less than 3.2 ma/v	
Frequency range over which there are no mechanical resonances of tube structure	from 10 to 500 cps	

*Plate-current variation no more than $\pm 7\%$.

**At frequency of 50 cps.

Note: The characteristics are the same as for the 6Zh1B.

←Change and Addition introduced.

(Above material published April 1959, PKB, Sheet 2)

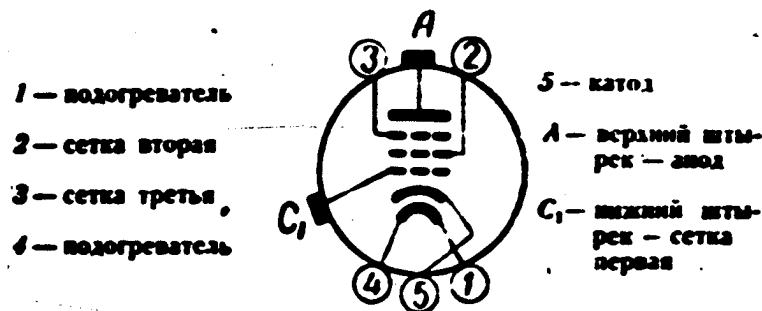
SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh1Zh

Basic function radio-frequency voltage amplifier.Construction glass, "acorn" type.General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Maximum weight
 Number of pins
 Dimension drawing — 2Zh

47.6 mm
 29.4 mm
 15 grams
 7

Connection Diagram for Electrodes and Pins

1) Heater; 2) screen; 3) suppressor; 4) heater; 5) cathode; A) top pin — plate; C₁) lower pin — control grid.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	150 ± 15 ma
Plate voltage (=)	250 v
Suppressor voltage (=)	0 v
Screen voltage (=)	100 v
Control-grid voltage (=)	-3 v
Plate current	2.75 ± 1.75 ma
Plate current for first-grid voltage of -10 v	no more than 15 µa
Screen current	0.7 ± 0.4 ma
Transconductance	1.6 ± 0.6 ma/v
Transconductance for heater voltage of 5.5 v	no less than 0.8 ma/v
Internal resistance	1.2 megohm
First-grid back current	no more than 1.0 µa

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh1Zh

Cathode emission current*	no less than 20 ma
Cathode warm-up time	no more than 20 sec
Plate insulation resistance	no less than 20 megohms
First-grid insulation resistance	no less than 20 megohms
Service life	200 hours
Service-life criterion: transconductance	no less than 0.8 ma/v

*With 15 volts on plate and grid.

Interelectrode Capacitances

Input	$3.5 \pm 1 \mu\text{f}$
Output	$3 \pm 1 \mu\text{f}$
Transfer	no more than $0.018 \mu\text{f}$

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	6.9 v
Minimum heater voltage ($\sim$ or $=$)	5.7 v
Maximum plate voltage ($=$)	250 v
Maximum screen voltage ($=$)	125 v
Maximum first-grid voltage ($=$)	0 v
Maximum plate power dissipation	0.55 watt
Maximum screen power dissipation	1.11 watt
Maximum voltage between cathode and heater ($=$)	90 v

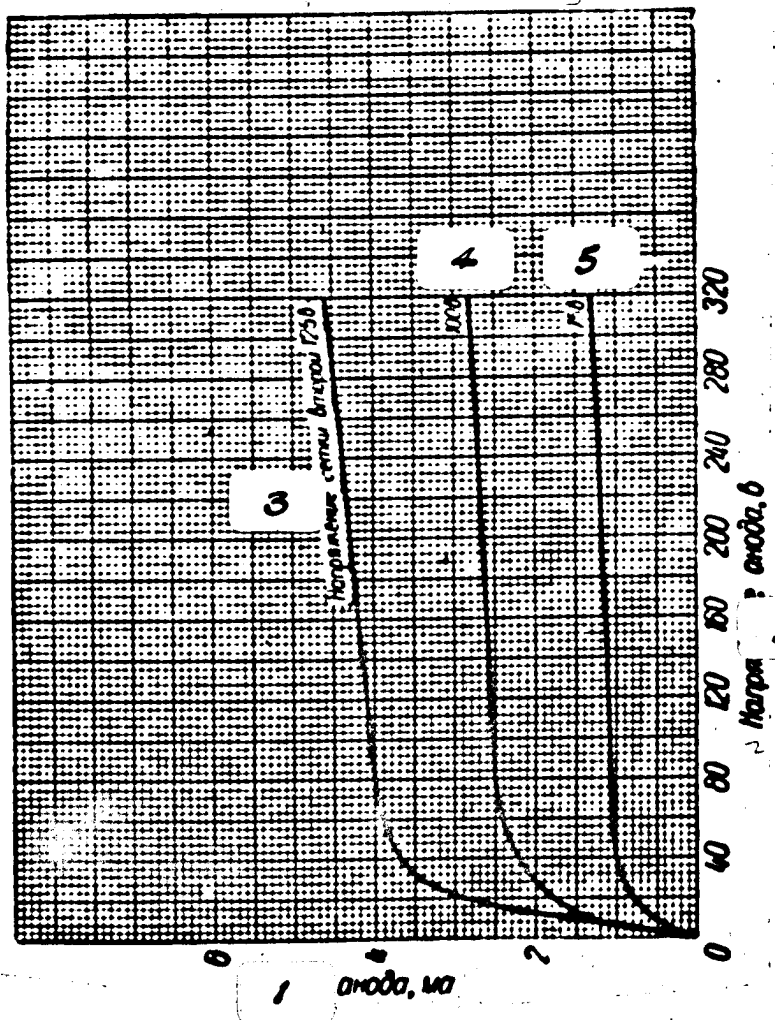
(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh1Zh

Average Plate Curves

Heater voltage, 6.3 v; first-grid voltage, -3 v; third-grid voltage, 0 v.



- 1) Plate current, ma; 2) plate voltage, v; 3) screen voltage, 125 v;
4) 100 v; 5) 150 v.

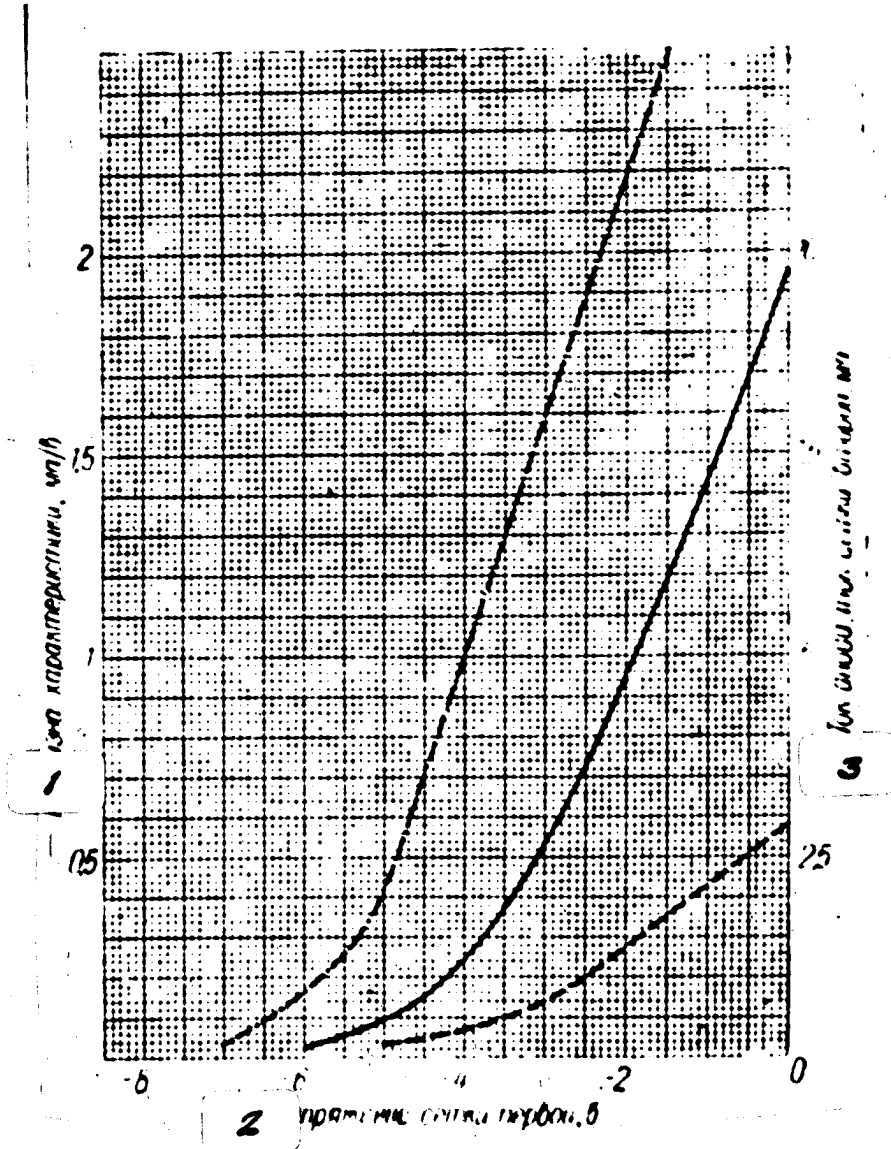
(Above material published April 1959, PKB, G-1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh1Zh

Average Characteristics

———— Plate-grid; ----- grid (screen grid); - - - - - transconductance; heater voltage, 6.3 v; plate voltage, 250 v; screen voltage, 100 v; suppressor voltage, 0 v.



1) Transconductance, ma/v; 2) first-grid voltage, v; 3) plate current, screen current, ma.

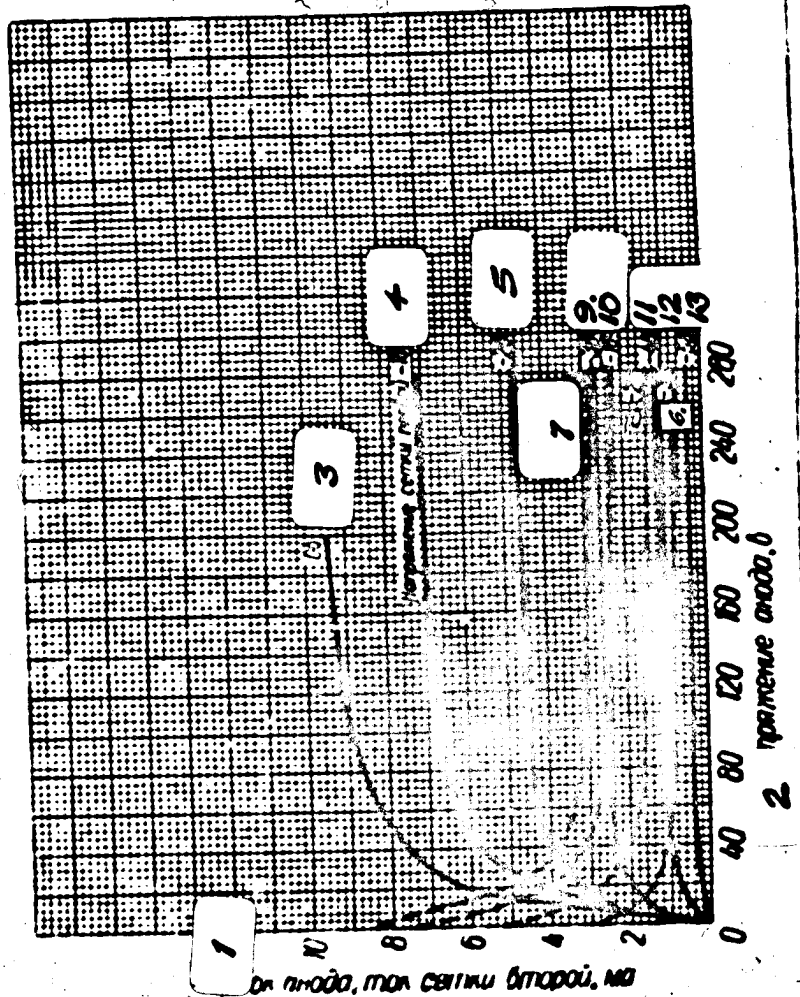
(Above material published April 1959, PKB, G-3)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh1Zh

Average Characteristics

———— Plate; ----- grid-plate (for screen grid); heater voltage, 6.3 v; screen voltage, 100 v; suppressor voltage, 0 v.



- 1) Plate current, screen current, ma; 2) plate voltage, v; 3) 0 v;
 4) first-grid voltage, -1 v; 5) -2 v; 6) -3 v; 7) 0 v; 8) -3 v;
 9) -1 v; 10) -2 v; 11) -4 v; 12) -3 v; 13) -5 v.

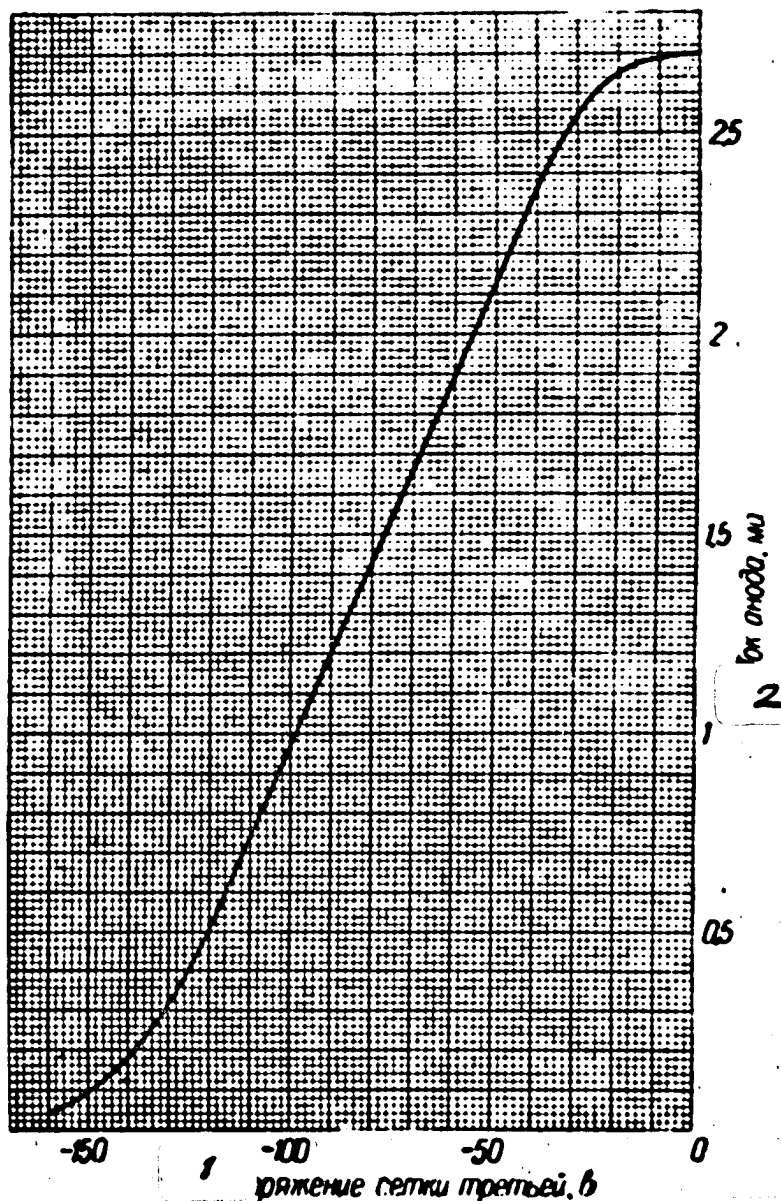
(Above material published April 1959, PKB, G-2)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh1Zh

Average Plate-Grid Curve

Heater voltage, 6.3 v; plate voltage, 250 v; screen voltage, 100 v; first-grid voltage, -3 v.



1) Suppressor voltage, v; 2) plate current, ma.

(Above material published April 1959, PKB, G-4)

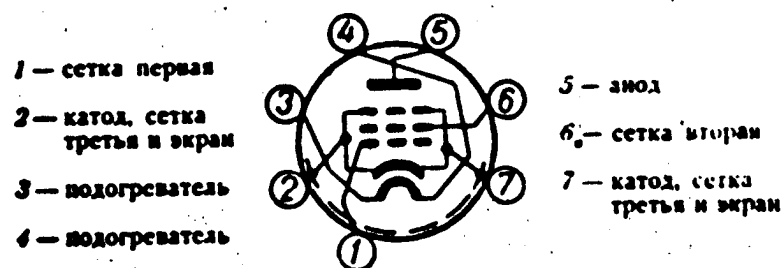
SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh1P

Basic function broad-band radio-frequency voltage amplifier.Construction glass miniature.General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Maximum weight
 Number of pins
 Dimension drawing — 2P

48 mm
 19 mm
 15 grams
 7

Connection Diagram for Electrodes and Pins

- 1) First grid; 2) cathode, third grid, and shield; 3) heater; 4) heater;
 5) plate; 6) screen grid; 7) cathode, third grid, and shield.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	170 ± 15 ma
Plate voltage (=)	120 v
Screen voltage (=)	120 v
Cathode-circuit resistance, self-biasing	200 ohms
Plate current	7.35 ± 2.35 ma
Plate current for first-grid voltage of -10 v	no more than 100 μ a
Screen current	no more than 3 ma
Transconductance	5.15 ± 1.25 ma/v
Transconductance for heater voltage of 5.7 v	no less than 3.4 ma/v
Internal resistance	from 0.1 to 1.1 megohms
Equivalent internal noise resistance	no more than 3.7 kohm

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh1P

Input resistance at frequency of 60 Mc	from 12 to 25 kohm
Negative plate-current cutoff voltage (for plate current of no more than 5 μ a)	no more than 15 v
Negative first-grid electron-current cut- off voltage	no more than 1.5 v
First-grid back current*	no more than 0.1 μ a
Cathode emission current	no less than 30 ma
Leakage current between cathode and heater	no more than 20 μ a
Service life	500 hours
Service-life criteria:	
transconductance	no less than 3.4 ma/v
first-grid back current	no more than 0.15 μ a

*For first-grid voltage of -2 v.

Interelectrode Capacitances

Input	4.35 $\pm$ 0.45 μ mf
Output	2.35 $\pm$ 0.25 μ mf
Transfer	no more than 0.02 μ mf
Cathode-heater	no more than 4.6 μ mf

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or =)	7 v
Minimum heater voltage ($\sim$ or =)	5.7 v
Maximum plate voltage (=)	200 v
Maximum plate voltage with tube cut off (for plate current of no more than 5 μ a) (=)	225 v
Maximum screen voltage (=)	150 v
Maximum screen voltage with tube cut off (for plate current of no more than 5 μ a) (=)	225 v
Maximum plate power dissipation	1.8 watts
Maximum screen power dissipation	0.55 watt
Maximum cathode current	20 ma
Maximum voltage between cathode and heater (=)	120 v
Maximum resistance in first-grid circuit	1 megohm
Minimum resistance in cathode circuit, self-biasing	200 ohms
Maximum envelope temperature	140°C

← Change and addition introduced.

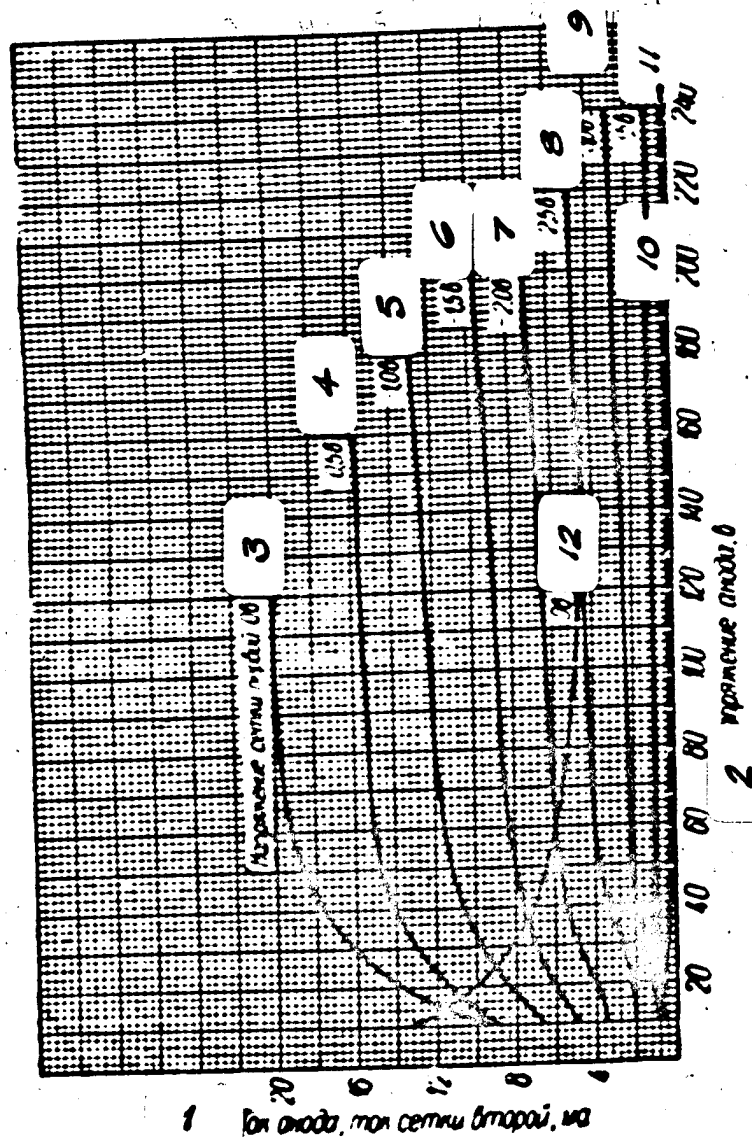
(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh1P

Average Characteristics

———— Plate; ----- grid-plate (for screen grid); heater voltage, 6.3 v; screen voltage, 120 v.



1) Plate current, screen current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -0.5 v; 5) -1.0 v; 6) -1.5 v; 7) -2.0 v; 8) -2.5 v; 9) -3.0 v; 10) -3.5 v; 11) -3.5 v.; 12) 0 v.

(Above material published April 1959, PKB, G-1)

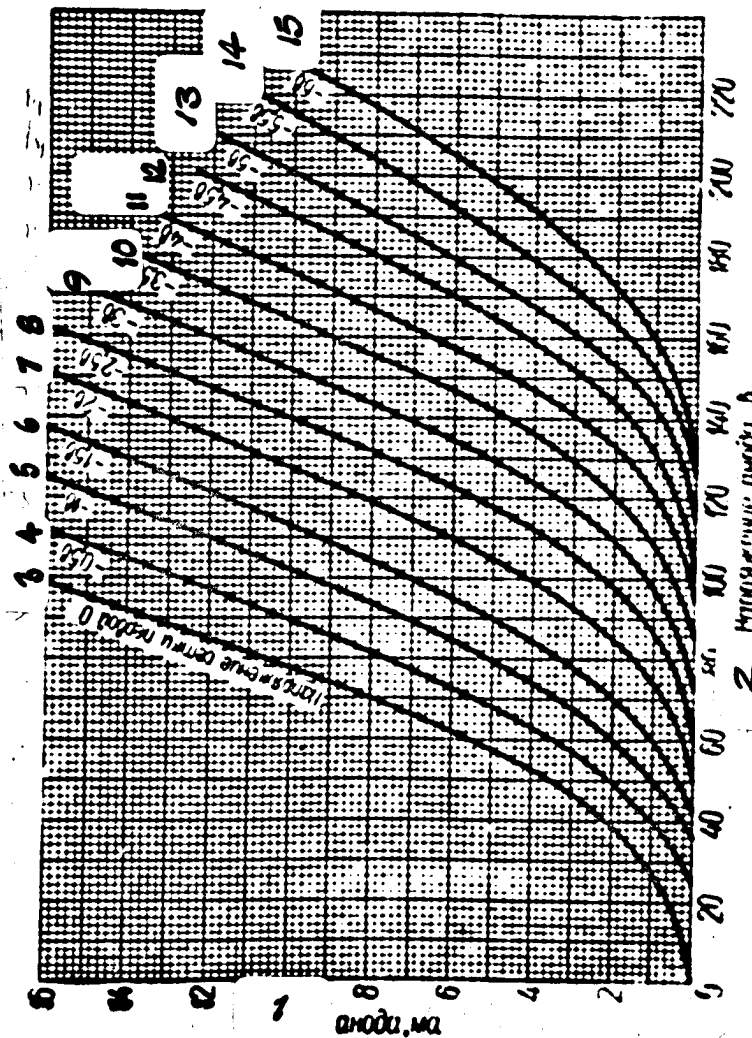
SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh1P

Average Plate Curves

(triode connection)

Heater voltage, 6.3 v.



- 1) Plate current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v;
 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) -2 v; 8) -2.5 v; 9) -3 v; 10) -3.5 v;
 11) -4 v; 12) -4.5 v; 13) -5 v; 14) -5.5 v; 15) -6 v.

(Above material published April 1959, PKB, G-3)

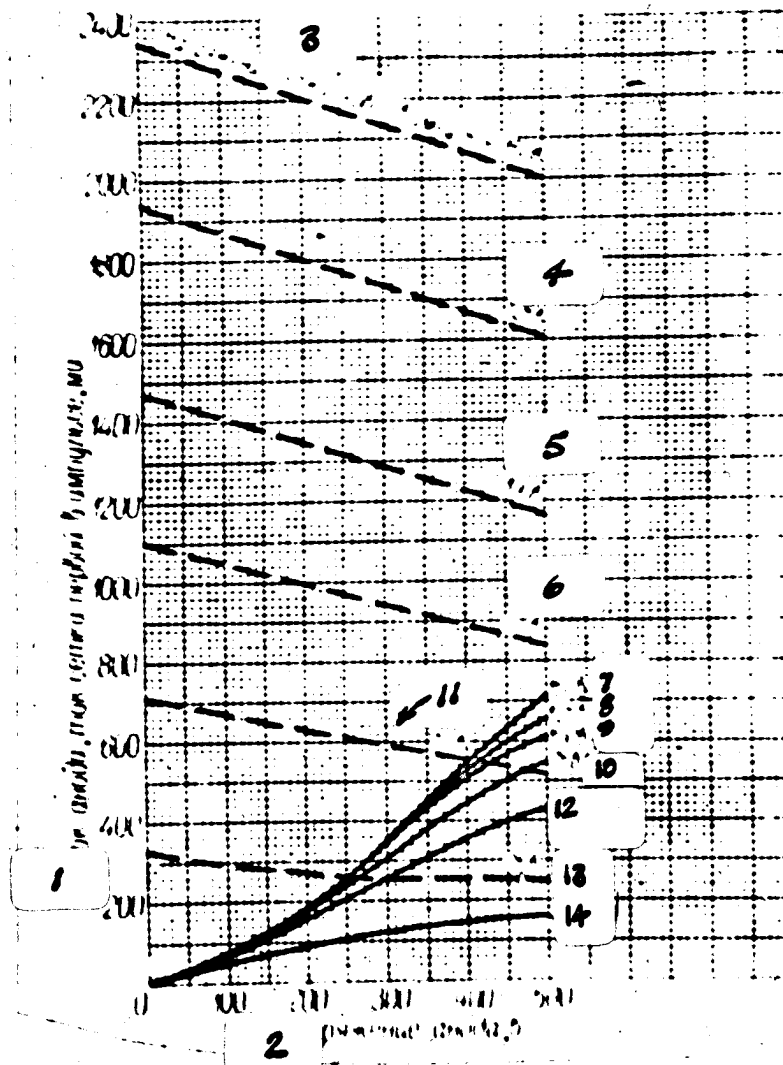
SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh1P

Average Pulse Characteristics

(first and second grids connected)

———— Plate; ----- grid-plate; heater voltage, 6.3 v; pulse repetition rate, 1 kc; pulse length, 2 μ sec.



1) Plate current, first-grid current, pulsed, ma; 2) plate voltage, v; 3) first-grid voltage, pulsed, 150 v; 4) 125 v; 5) 100 v; 6) 75 v; 7) 150 v; 8) 125 v; 9) 100 v; 10) 75 v; 11) 50 v; 12) 50 v; 13) 25 v; 14) 25 v.

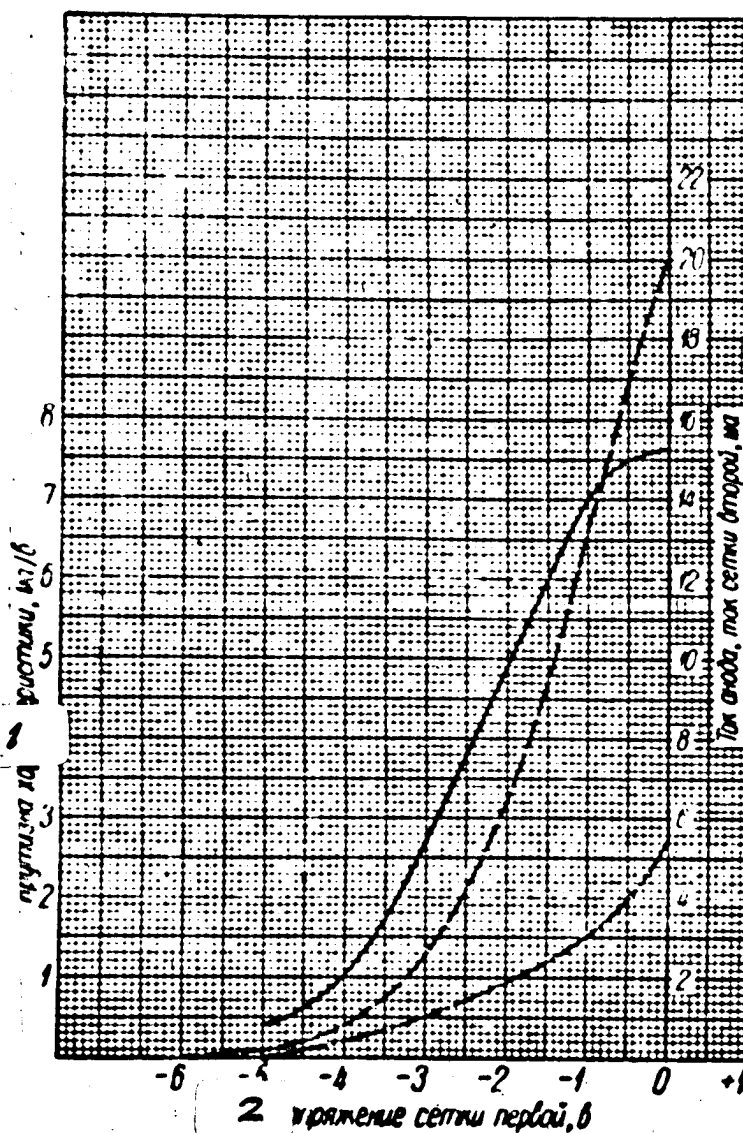
(Above material published April 1959, PKB, G-5)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh1P

Average Characteristics

———— Mutual conductances; ----- plate-grid(for screen grid);
 -.-.-.- grid; heater voltage, 6.3 v; screen voltage, 120 v.



1) Mutual conductance, ma/v; 2) first-grid voltage, v; 3) plate current, screen current, ma.

(Above material published April 1959, PKB, G-2)

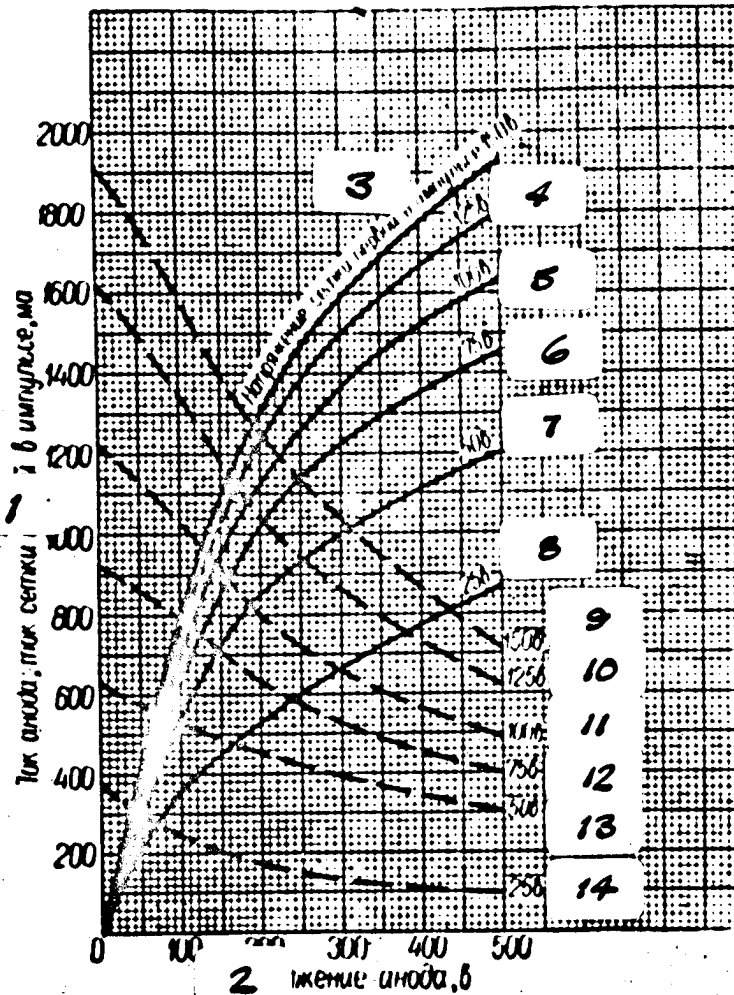
SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh1P

Average Pulse Characteristics

(screen connected to plate)

———— Plate; ----- grid-plate; heater voltage, 6.3 v; pulse repetition rate, 1 kc; pulse length, 2 μ sec.



- 1) Plate current, first-grid current, pulsed, ma; 2) plate voltage, v;
 3) first-grid voltage, pulsed, 150 v; 4) 125 v; 5) 100 v; 6) 75 v;
 7) 50 v; 8) 25 v; 9) 150 v; 10) 125 v; 11) 100 v; 12) 75 v; 13) 50 v;
 14) 25 v.

(Above material published April 1959, PKB, G-4)

SHARP-CUTOFF INCREASED-RELIABILITY
RADIO-FREQUENCY PENTODE

6Zh1P-V

[Left-hand side of this page is missing in original; items identified only tentatively are marked with a "?".

Basic function broad-band radio-frequency voltage amplifier.

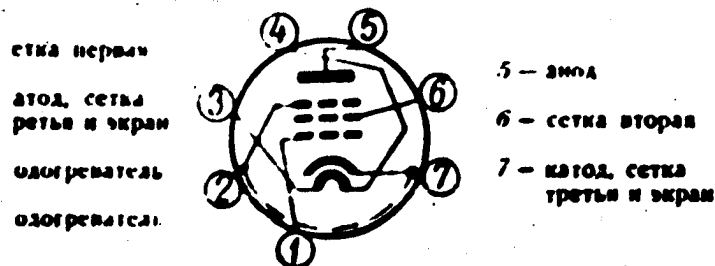
Construction glass miniature.

General Data

Cathode — oxide-coated heater-type
Maximum height
Maximum diameter
Maximum weight
Number of pins
Dimension drawing — 2P

48 mm
19 mm
15 grams
7

Connection Diagram for Electrodes and Pins



1) First grid; 2) cathode, third-grid, and screen; 3) heater; 4) heater; 5) plate; 6) screen; 7) cathode, third-grid, and shield.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	170 ± 15 ma
Plate voltage (=)	120 v
Screen voltage (=)	120 v
Resistance in cathode circuit for self biasing	200 ohms?
Plate current	7.35 ± 2.35 ma?
Plate current with first-grid voltage of -10 v	no more than 50 µa?
Screen current	no more than 3.0 ma?
Transconductance	5.15 ± 1.25 ma/v
Transconductance for heater voltage of 5.7 v	no less than 3.4 ma/v
Internal resistance	from 0.1 to 1 megohm? ←
Resistance at frequency of 60 Mc	no less than 12 kohm?

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

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SHARP-CUTOFF INCREASED-RELIABILITY
RADIO-FREQUENCY PENTODE

6Zh1P-V

Equivalent internal noise resistance	1.5 kohm
Negative plate-current cut-off voltage (for plate current of no more than 5 μ a)	18-12 v
Negative first-grid electron-current cut-off voltage	1.5 v
First-grid back current*	no more than 0.1 μ a
Cathode emission current	no less than 25 ma
Leakage current between cathode and heater	no more than 15 μ a
Service life	500 hours
Service-life criteria:	
transconductance	no less than 3.4 ma/v
first-grid back current	no more than 0.15 μ a

*For first-grid voltage of -2 v.

Interelectrode Capacitances

Input	4.35 $\pm$ 0.45 μ mf
Output	2.35 $\pm$ 0.25 μ mf
Transfer	no more than 0.018 μ mf
Cathode-heater	no more than 4.6 μ mf

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or =)	7 v
Minimum heater voltage ($\sim$ or =)	5.7 v
Maximum plate voltage (=)	200 v
Maximum plate voltage with tube cut off (for plate current of no more than 5 μ a) (=)	225 v
Maximum screen voltage (=)	150 v
Maximum screen voltage with tube cut off (for plate current of no more than 5 μ a) (=)	225 v
Maximum plate power dissipation	1.8 watts
Maximum screen power dissipation	0.55 watt
Maximum cathode current	20 ma
Maximum voltage between cathode and heater (=)	120 v
Minimum resistance in cathode circuit with self biasing	200 ohms
Maximum resistance in first-grid circuit	1 megohm
Maximum envelope temperature	130°C

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF INCREASED-RELIABILITY
RADIO-FREQUENCY PENTODE

6Zh1P-V

Resistance to External Effects

Minimum atmospheric pressure	20 mm Hg
Maximum centrifugal acceleration	100 g
Maximum acceleration*:	
for short-duration vibration	10 g
for long-term vibration (up to 100 hours)	6 g
Maximum acceleration for individual shocks (up to 10 shocks)	500 g

*At frequency of 50 cps.

Note: Characteristics the same as for the 6Zh1P.

(Above material published April 1959, PKB, Sheet 2)

SHARP-CUTOFF LONG-LIFE RADIO-FREQUENCY PENTODE 6Zh1P-Ye

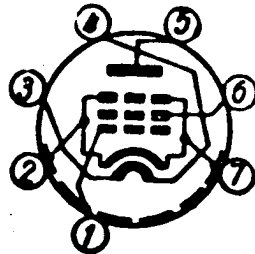
Basic function broad-band radio-frequency voltage amplification.Construction glass miniature.General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Number of pins
 Dimension drawing — 2P

48 mm
 19 mm
 7

Connection Diagram for Electrodes and Leads

1 — сетка первая
 2 — катод, сетка
 третья и экран
 3 — подогреватель
 4 — подогреватель



5 — анод
 6 — сетка вторая
 7 — катод, сетка
 третья и экран

1) First grid; 2) cathode, third grid, and shield; 3) heater;
 4) heater; 5) plate; 6) screen; 7) cathode, third grid, and shield.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	170 ± 10 ma
Plate voltage (=)	120 v
Screen voltage (=)	120 v
Resistance in cathode circuit for self biasing	200 ohms
Plate current	7.35 ± 2.35 ma
Plate current for first-grid voltage of -10 v	no more than 50 μ a
Screen current	no more than 3 ma
Transconductance	5.15 ± 1.25 ma/v
Transconductance for heater voltage of 5.7 v	no less than 3.4 ma/v
Internal resistance	0.1 - 1.0 megohm
Input resistance at frequency of 60 Mc	no less than 12 kohm
Negative first-grid electron-current cut-off voltage	no more than 1.5 v
First-grid back current*	no more than 0.1 μ a

*For first-grid voltage of -2 v.

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF LONG-LIFE RADIO-FREQUENCY PENTODE 6Zh1P-Ye

Cathode-heater insulation resistance*	no less than 17 megohms
Cathode warm-up time	no more than 20 sec
Service life	5000 hours
Service-life criteria:	
first-grid back current	no more than 0.3 μ a
transconductance	no less than 3.4 ma
variation in transconductance from initial value	no more than $\begin{matrix} +35\% \\ -30\% \end{matrix}$

*For voltage between cathode and heater of ± 250 v.

Interelectrode Capacitances

Input	$4.35 \pm 0.45 \mu\text{f}$
Output	$2.35 \pm 0.25 \mu\text{f}$
Transfer	no more than 0.018 μf
Cathode-heater	no more than 4.6 μf

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)*	6.6 v
Minimum heater voltage ($\sim$ or $=$)*	6 v
Maximum plate voltage ($=$)*	120 v
Maximum screen voltage ($=$)*	120 v
Maximum plate power dissipation*	1.2 watts
Maximum screen power dissipation*	0.4 watt
Maximum cathode current*	13 ma
Maximum voltage between cathode and heater ($=$):	
for negative heater potential*	120 v
for positive heater potential-	90 v
Maximum first-grid-circuit resistance	1 megohm
Minimum resistance in cathode circuit with self biasing	200 ohms
Maximum constant acceleration	100 g
Maximum vibration acceleration**	10 g

*With tube in use for a 500-hour period, the maximum permissible values for these constants are the same as for the 6Zh1P.

** At vibration frequency of 50 cps.

Note: Characteristics the same for the 6Zh1P.

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh2B

Basic function pulse generator.Construction glass subminiature.General Data

Cathode — oxide-coated heater-type	
Maximum height (without leads)	36 mm
Maximum diameter	10.2 mm
Number of leads	7
Length of leads	about 40
Lead diameter	about 0.4 mm
Maximum weight	3.5 grams
Dimension drawing — 5B	

Connection Diagram for Electrodes and Leads

- 1) Plate; 2) suppressor; 3) screen; 4) heater; 5) heater; 6) cathode;
7) control grid; A) Indicator dot.

Electrical Data

Heater voltage ($\sim$ or $=$)	6.3 v
Heater current	200 ± 20 ma
Plate voltage ($=$)	120 v
Screen voltage ($=$)	120 v
Resistance in cathode circuit, self biasing	200 ohms
Plate current	5.5 ± 2 ma
Plate current for suppressor voltage of -15 v	no more than 20 μ a
Screen current	no more than 6 ma
Transconductance	$3.2^{+1.3}_{-0.6}$ ma/v
Transconductance at heater voltage of 5.7 v	no less than 2.2 ma/v
Suppressor-grid mutual conductance*	$0.8^{+0.6}_{-0.4}$ ma/v

*For suppressor voltage of -3 v.

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh2B

Suppressor mutual conductance*	no more than 25 $\mu\text{a/v}$
First-grid back current	no more than 0.2 μa
First-grid thermionic emission current**	no more than 0.2 μa
Leakage current between cathode and heater	no more than 20 μa
Vibration-noise voltage***	no more than 200 mv (eff)
First-grid insulation resistance	no less than 100 megohms
Service life	500 hours
Service-life criteria:	
transconductance	no less than 2.1 ma/v
first-grid back current	no more than 0.5 μa

←

*For third-grid voltage of 20 v.

**For heater voltage of 7.5 v, first-grid voltage of -2 v, and zero plate voltage.

***For plate-load resistance of 10 kohm, at a vibration frequency of 50 cps and an amplitude of 1 mm.

Interelectrode Capacitances*

Input	4.9 $\pm$ 0.85 μmf
Output	4.1 $\pm$ 1 μmf
Transfer	no more than 0.03 μmf
Cathode-heater	no more than 7 μmf

←

*Measured within shield.

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	6.9 v	←
Minimum heater voltage ($\sim$ or $=$)	5.7 v	←
Maximum plate voltage ($=$)	150 v	
Maximum plate voltage with tube cut off (for plate current of no more than 5 μa) ($=$)	250 v	←
Maximum plate power dissipation	0.9 watt	
Maximum screen power dissipation	0.7 watt	
Maximum voltage between cathode and heater ($=$)	150 v	
Maximum first-grid resistance	1 megohm	
Maximum cathode current	14 ma	
Maximum cathode warm-up time	15 sec	
Maximum envelope temperature	170°C	
Maximum screen current (equal)	125 v	
Maximum screen voltage, tube cut off (plate current $\leq$ 5 μa) (equal)	250 v	←

← Change and addition introduced.

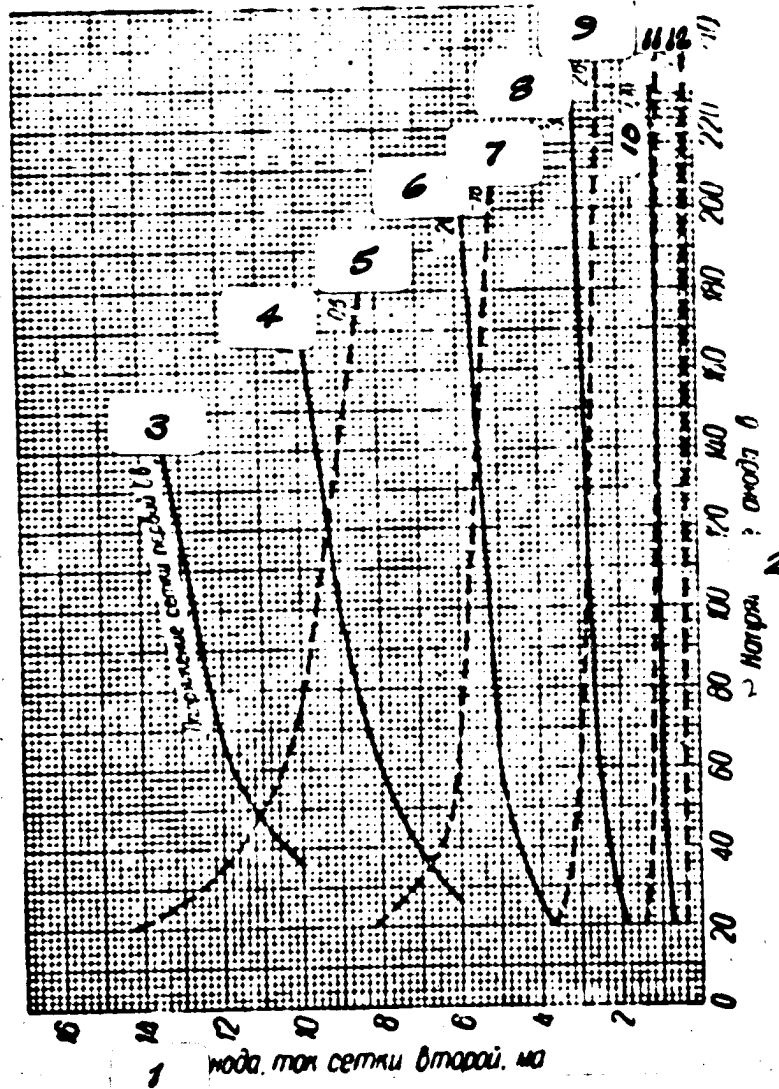
(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh2B

Average Characteristics

———— Plate; ----- grid-plate (for screen grid); heater voltage, 6.3 v; screen voltage, 120 v; suppressor voltage, 0 v.



1) Plate current, screen current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -1 v; 5) 0 v; 6) -2 v; 7) -1 v; 8) -3 v; 9) -2 v; 10) -4 v; 11) -3 v; 12) -4 v.

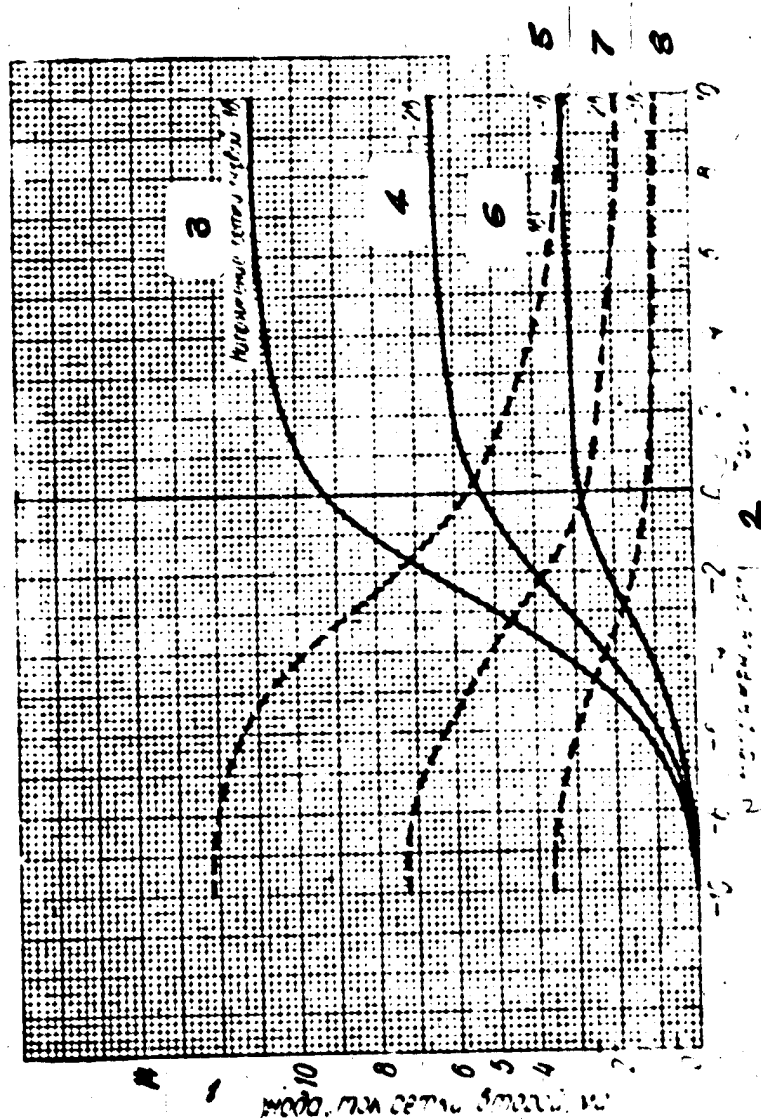
(Above material published April 1959, PKB, G-1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh2B

Average Characteristics

———— Plate-grid; ----- grid (for screen grid); heater voltage, 6.3 v; plate voltage, 120 v; screen voltage, 120 v.



- 1) Plate current, screen current, ma; 2) third-grid voltage, v;
 3) first-grid voltage, -1 v; 4) -2 v; 5) -3 v; 6) -1 v; 7) -2 v;
 8) -3 v.

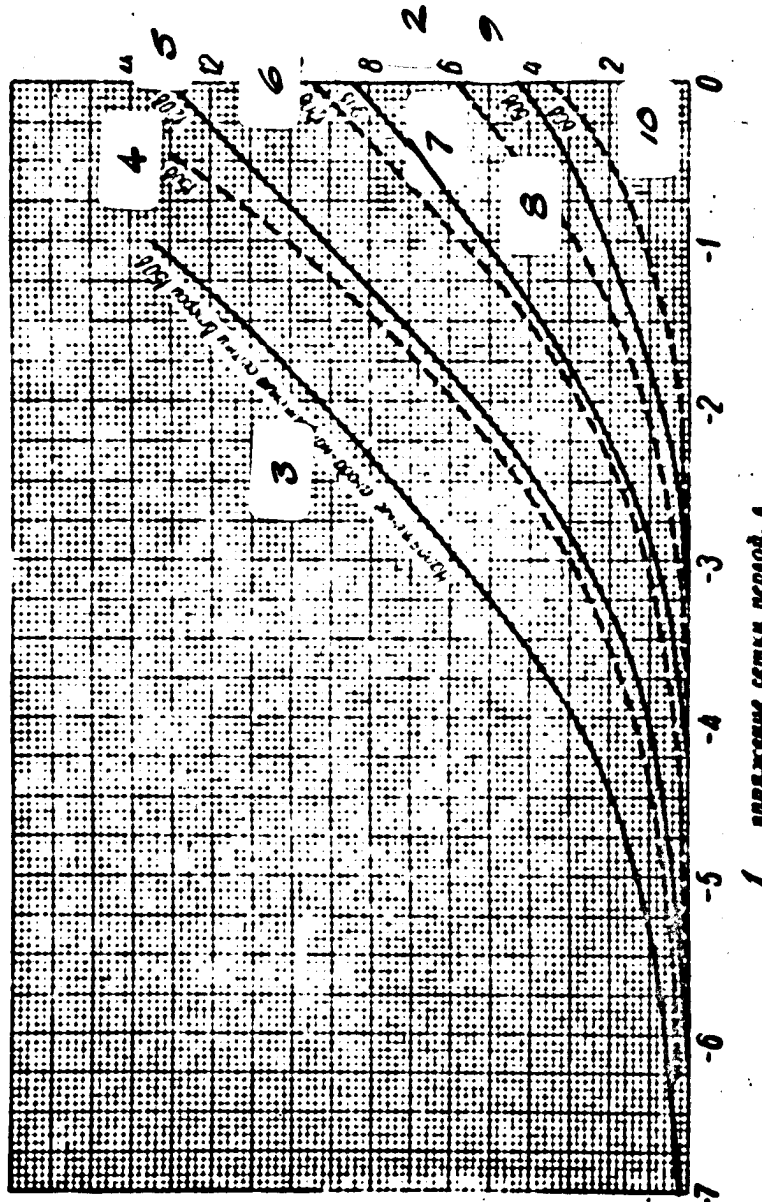
(Above material published April 1959, PKB, G-3)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh2B

Average Characteristics

———— Plate-grid; ----- grid (for screen grid); heater voltage, 6.3 v; suppressor voltage, 0 v.



- 1) First-grid voltage, v; 2) plate current, screen current, ma;
 3) plate voltage, screen voltage, 150 v; 4) 150 v; 5) 120 v; 6) 120 v;
 7) 90 v; 8) 50 v; 9) 60 v; 10) 60 v.

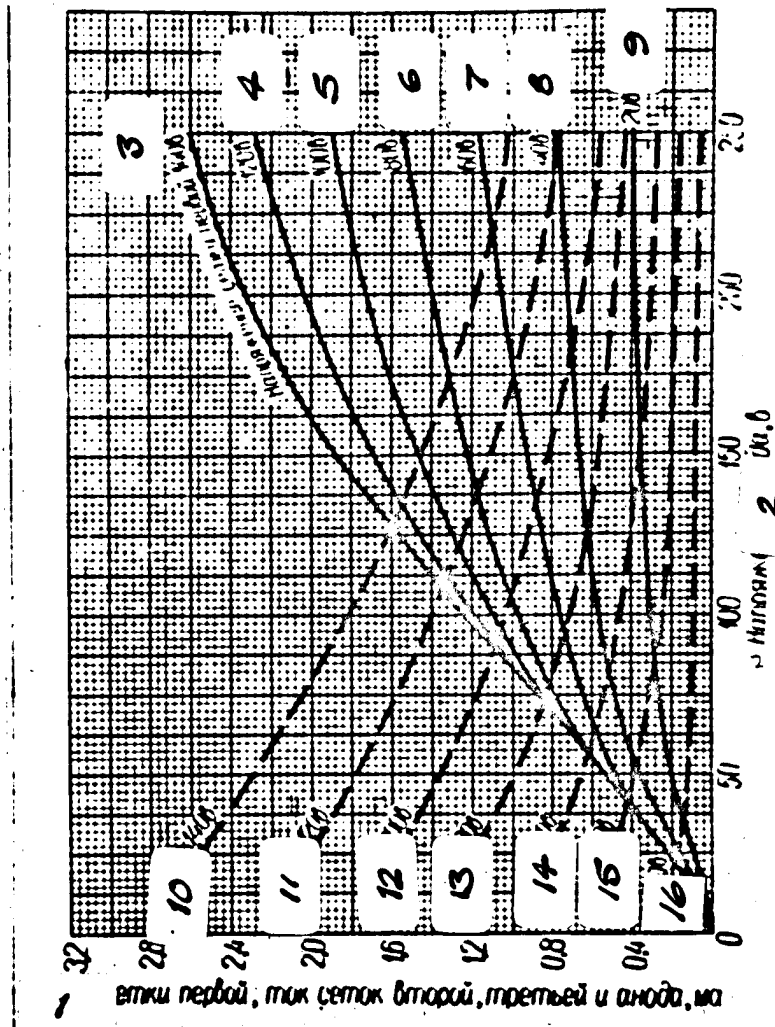
(Above material published April 1959, PKB, G-2)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh2B

Average Pulse Characteristics
(triode connection)

— Plate; ----- grid-plate (first grid); heater voltage, 6.3 v.



- 1) First-grid current, screen current, third-grid current, plate current, ma; 2) plate voltage, v; 3) first-grid voltage, 140 v; 4) 120 v; 5) 100 v; 6) 80 v; 7) 60 v; 8) 40 v; 9) 20 v; 10) 140 v; 11) 120 v; 12) 100 v; 13) 80 v; 14) 60 v; 15) 40 v; 16) 20 v.

(Above material published April 1959, PKB, G-4)

SHARP-CUTOFF VIBRATION-RESISTANT RADIO-FREQUENCY PENTODE 6Zh2B-V

Basic function Pulse formation in special radio equipment.Construction glass subminiature.General Data

Cathode — oxide-coated heater-type	
Maximum height (without leads)	36
Maximum diameter	10.2 mm
Number of pins	7
Pin length	no less than 40 mm
Pin diameter	0.3 - 0.4 mm
Maximum weight	3.5 grams
Dimension drawing — 5B	

Connection Diagram for Electrodes and Leads

1 — анод

2 — сетка третья

3 — сетка вторая

4 — подогреватель



5 — подогреватель

6 — катод

7 — сетка первая

Индикаторная метка A

- 1) Plate; 2) suppressor; 3) screen; 4) heater; 5) heater; 6) cathode;
7) first grid; A) Indicator dot.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	200 + 20 ma
Plate voltage (=)	120 v
Screen voltage (=)	120 v
Resistance in cathode circuit for self biasing	200 ohms
Plate current	5.5 ± 2.0 ma
Plate current for suppressor voltage of -15 v	no more than 30 μa
Plate current for first-grid voltage of -2 v	5.5 ma* ←
Screen current	no more than 5.5 ma
Transconductance	3.75 ± 0.95 ma/v
Transconductance for first-grid voltage of -2 v	3.75 ma/v* ←

*Rough value.

← Change and addition introduced.

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF VIBRATION-RESISTANT RADIO-FREQUENCY PENTODE 6Zh2B-V

[Left side of original Russian page is missing; items that cannot be established with certainty are marked with "?".]

Transconductance for heater voltage of 5.7 v	no less than 2.3 ma/v 0.8-0.35 ma/v
Suppressor-grid mutual conductance*	
Suppressor-grid mutual conductance for first-grid voltage of -2 v**	no more than 25 μ a/v****? 25 kohm*?..
Resistance	
Maximum first-grid voltage for plate current of 50 μ a	5.5 v?
Maximum suppressor voltage for plate current of 50 μ a	9 v?
First-grid current	no more than 15 μ a?
First-grid current****	no more than 0.2 μ a?
Leakage current between cathode and heater*****	no more than 20 μ a?
Vibration noise-voltage*****	no more than 180 mv (eff) 500 hours
Service life	
Service-life criterion:	
transconductance	no less than 2.3 ma/v
deviation of transconductance from initial value	from -40 to +30%?
First-grid current	no more than 0.5 μ a?
Stable operating time	no less than 100 hours
Criterion of stable operation:	
transconductance	no less than 2.3 ma/v
deviation of transconductance from initial value	$\pm 28\%$?
Initial first-grid current	no more than 0.5 μ a?
*Third-grid voltage -3 v.?	
**?	
***Third-grid voltage, -20 v.?	
****Heater voltage, 7.5 v, first-grid voltage, -2 v, and 0 volts on plate and screen.?	
*****Voltage between cathode and heater, ± 250 v.?	
*****Plate load resistance 10 kohm for vibration at 50 cps and acceleration of 12 g.?	

Interelectrode Capacitances*

Input	4.9 $\pm$ 0.85 μ mf
Output	4.1 $\pm$ 1.0 μ mf
Transfer	no more than 0.03 μ mf
Cathode-heater	no more than 5 μ mf?

*Measured within shield.

Maximum Permissible Operating Data

Maximum heater voltage { ~ or = }	6.9 v
Minimum heater voltage { ~ or = }	5.7 v
Maximum plate voltage (=)	150 v
← Change introduced.?	
(Above material published April 1959, PKB, Sheet 1)	

SHARP-CUTOFF VIBRATION-RESISTANT RADIO-FREQUENCY PENTODE 6Zh2B-V

Maximum plate voltage with tube cut off (plate current no more than 5 μ a) (=)	250 v
Maximum screen voltage (=)	125 v
Maximum screen voltage with tube cut off (plate current no more than 5 μ a) (=)	250 v
Maximum plate power dissipation	0.9 watt
Maximum screen power dissipation	0.1 watt
Maximum first-grid power dissipation	0.1 watt
Maximum cathode current	14 ma
Minimum cathode warm-up time	15 sec
Maximum voltage between cathode and heater (=)	150 v
Maximum resistance in first-grid circuit	1 megohm
Maximum envelope temperature	170°C

Resistance to External Effects

Stable operating time at ambient temperature of 100°C	no less than 98 hours
Maximum envelope temperature over 100-hour period at ambient temperature not exceeding 100°C	200°C
Stable operating time for ambient temperature of 200°C	no less than 2 hours
Maximum temperature over 2-hour period at ambient temperature not exceeding 200°C	250°C
Minimum ambient temperature	-70°C
Cathode warm-up time at ambient temperature of -70°C	1 min
Minimum atmospheric pressure	5 mm Hg
Maximum relative humidity at ambient temperature of 50°C	98%
Maximum constant acceleration*	100 g
Maximum shock acceleration (10 shocks lasting 1 msec each)	500 g
Continuous vibration:**	
for acceleration of 6 g	80 hours
for acceleration of 10 g	20 hours
Criterion for suitability for extended vibration: transconductance	no less than 2.3 ma/v
frequency range over which there are no mechanical resonances of tube structure from 10 to 500 cps	
*Plate current variation no more than $\pm 7\%$.	
**At frequency of 50 cps.	

Note: Characteristics the same as for the 6Zh2B.

←Change and addition introduced.

(Above material published April 1959, PKB, Sheet 2)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh2P

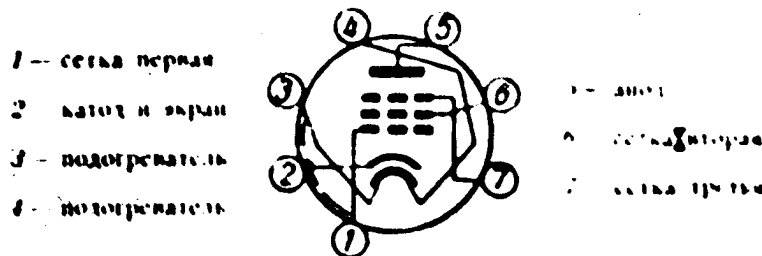
Basic function broad-band radio-frequency voltage amplifier
and frequency converter.

Construction glass miniature.

General Data

Cathode — oxide-coated heater-type
Maximum height
Maximum diameter
Maximum weight
Number of pins
Dimension drawing — 2P

48 mm
19 mm
15 grams
7

Connection Diagram for Electrodes and Pins

- 1) First grid; 2) cathode and shield; 3) heater; 4) heater; 5) plate;
6) screen grid; 7) suppressor grid.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	170 ± 15 ma
Plate voltage (=)	120 v
Screen voltage (=)	120 v
Suppressor voltage	0 v
Resistance in cathode circuit for self biasing	200 ohms
Plate current	5.5 ± 2 ma
Plate current for suppressor voltage of -15 v	no more than 50 µa
Suppressor current	no more than 5 ma
Transconductance	3.85 ± 0.85 ma/v
Transconductance at heater voltage of 5.7 v	no less than 2.4 ma/v
Suppressor-grid mutual conductance*	no less than 0.5 ma/v
Suppressor-grid mutual conductance**	no more than 25 µa/v

*For suppressor voltage of -3 v.

**For suppressor voltage of -20 v.

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh2P

Internal resistance	0.08-0.31 megohm.
Negative grid electron-current cutoff voltage	no more than 1.5 v
First-grid back current*	no more than 0.2 μ a
Cathode emission current	no less than 25 ma
Leakage current between cathode and heater	no more than 20 μ a
Service life	500 hours
Service-life criteria:	
first-grid transconductance	no less than 2.5 ma/v
first-grid back current*	no more than 0.3 μ a

*For first-grid voltage of -2 v.

Interelectrode Capacitances

Input	4.5 $\pm$ 0.5 μ mf	
Output	2.4 $\pm$ 0.3 μ mf	
Transfer	no more than 0.018 μ mf	←
First grid-screen grid	no more than 1.9 μ mf	←
Cathode-heater	no more than 4.5 μ mf	←

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or =)	7 v	
Minimum heater voltage ($\sim$ or =)	5.7 v	
Maximum plate voltage (=)	200 v	
Maximum screen voltage (=)	150 v	
Maximum plate power dissipation	1.8 watts	
Maximum screen power dissipation	0.85 watt	
Maximum voltage between cathode and heater (=)	120 v	
Maximum cathode current	20 ma	
Minimum resistance in cathode circuit for self biasing	200 ohms	
Maximum resistance in first-grid circuit	1 megohm	
Maximum envelope temperature	140°C	←

← Change introduced.

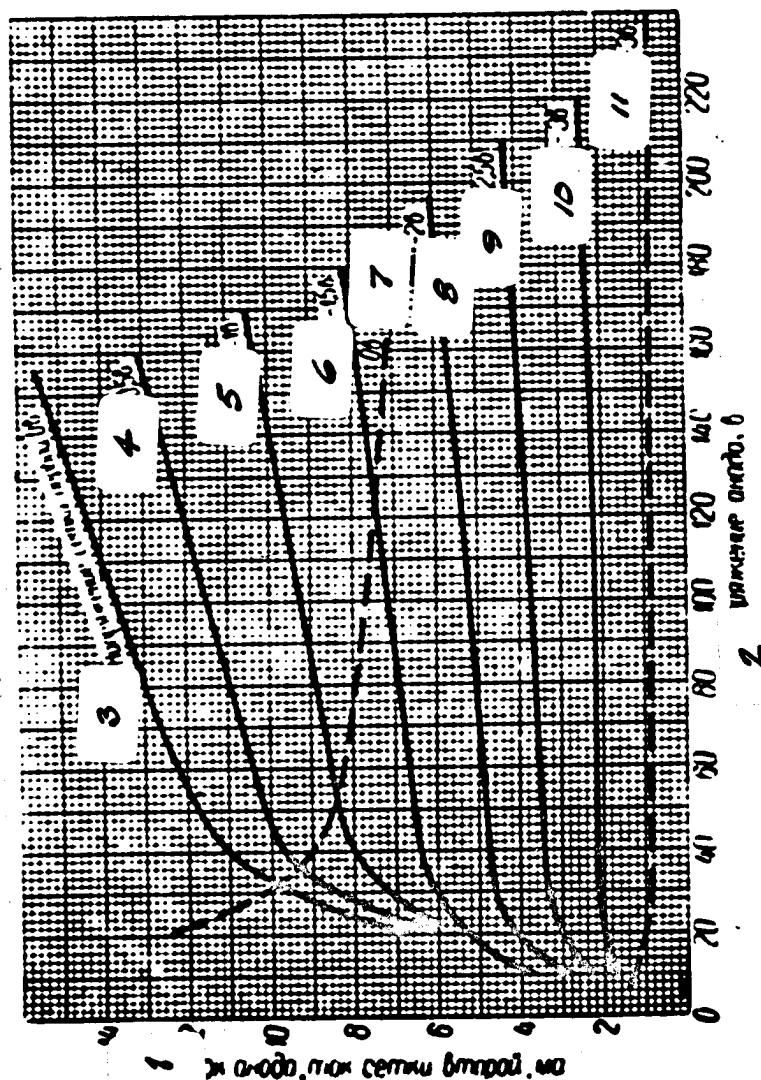
(Above material published April 1959, PKB, Sheet 1)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6Zh2P

Average Characteristics

———— Plate; ----- grid-plate (for screen grid); heater voltage, 6.3 v; screen voltage, 120 v.



1) Plate current, screen current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) 0 v; 8) -2 v; 9) -2.5 v; 10) -3 v; 11) -3 v.

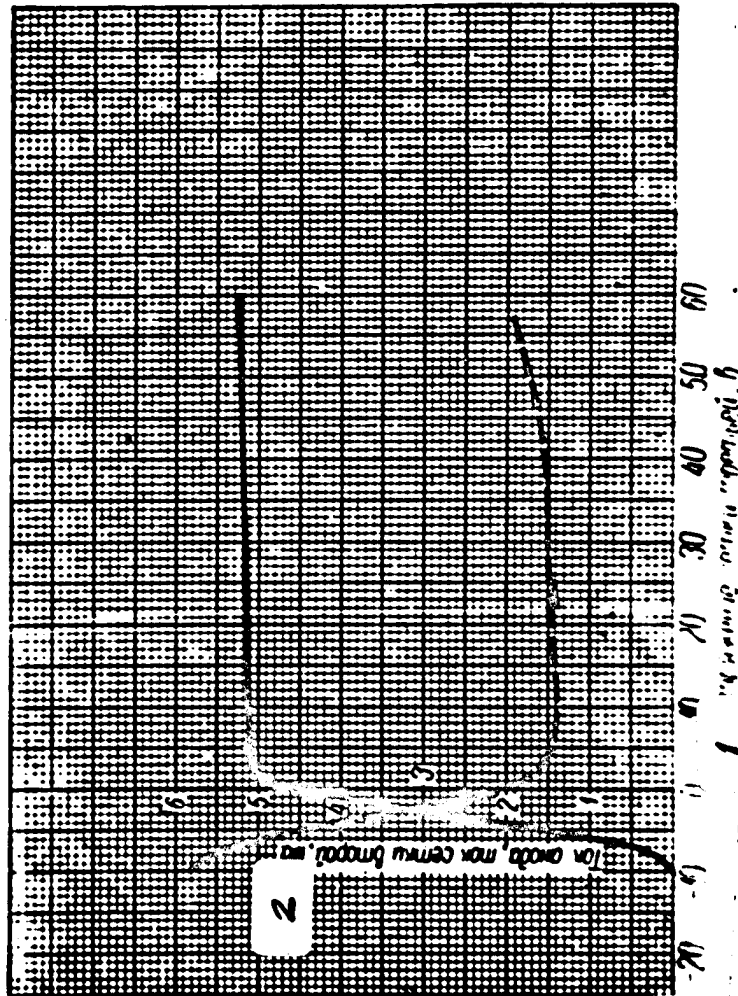
(Above material published April 1959, PKB, G-1)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6Zh2P

Average Characteristics

----- Plate-grid; ——— grid (for screen grid); heater voltage, 6.3; plate voltage, 120 v; screen voltage, 120 v; first-grid voltage, -2 v.



1) Third-grid voltage, v; 2) plate current, screen current, ma.

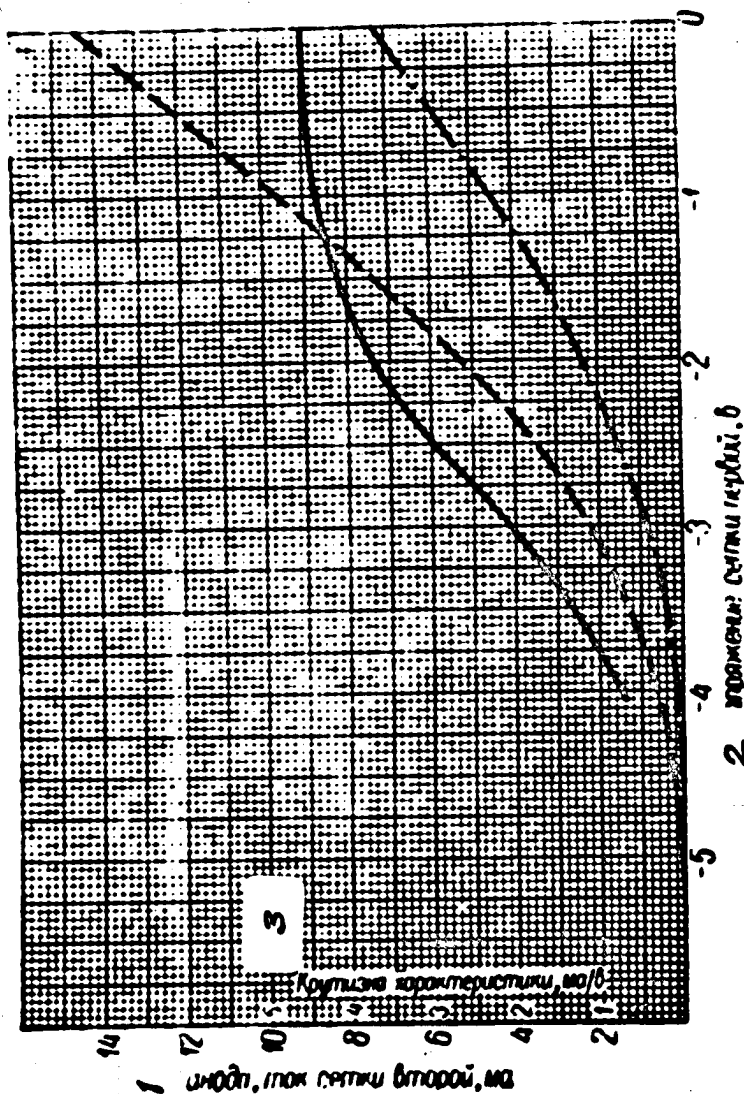
(Above material published April 1959, PKB, G-3)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh2P

Average Characteristics

———— Mutual conductances; ----- Plate-grid; -.-.-.- grid (for screen grid); heater voltage, 6.3 v; screen voltage, 120 v.



- 1) Plate current, screen current, ma; 2) first-grid voltage, v;
3) mutual conductance, ma/v.

(Above material published April 1959, PKB, G-2)

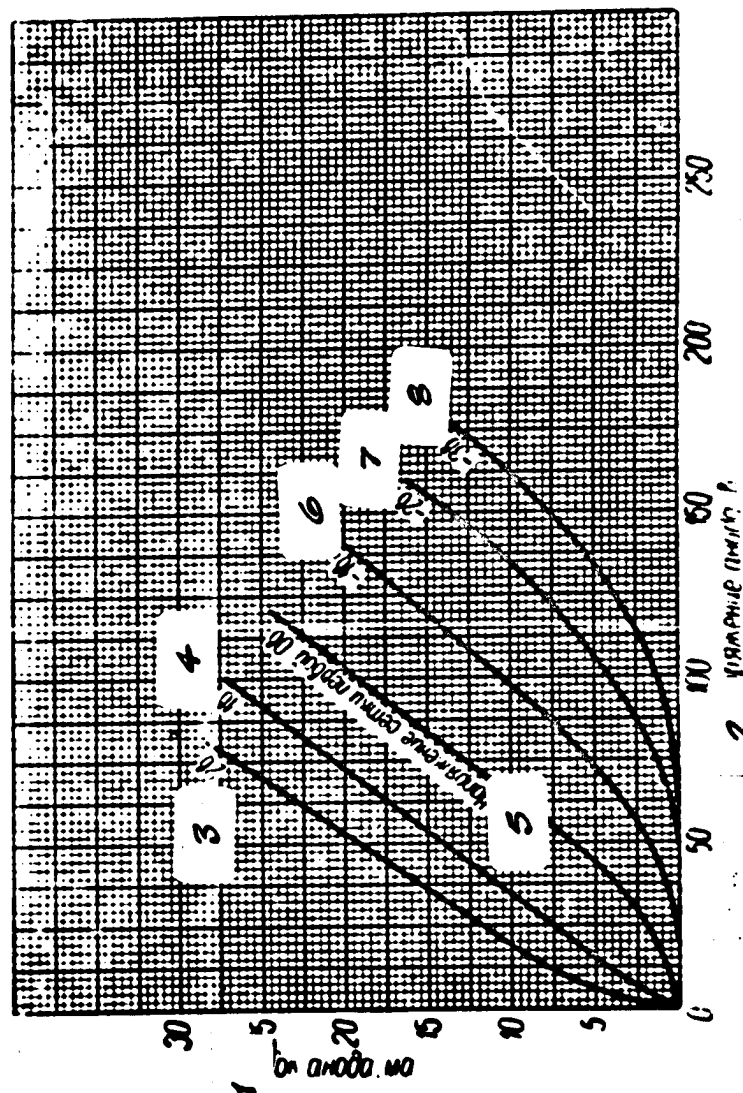
SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh2P

Average Plate Characteristics

(triode connection)

Heater voltage, 6.3 v.



1) Plate current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) 2 v; 5) 1 v; 6) -1 v; 7) -2 v; 8) -3 v.

(Above material published April 1959, PKB, G-4)

SHARP-CUTOFF INCREASED-RELIABILITY
RADIO-FREQUENCY PENTODE

6Zh2P-V

Basic function broad-band radio-frequency voltage amplifier
and frequency converter.

Construction glass miniature.

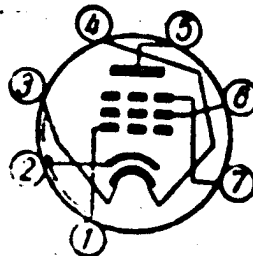
General Data

Cathode — oxide-coated heater-type
Maximum height
Maximum diameter
Maximum weight
Number of pins
Dimension drawing — 2P

48 mm
19 mm
15 grams
7

Connection Diagram for Electrodes and Pins

1 — сетка первая
2 — катод и экран
3 — подогреватель
4 — подогреватель



5 — анод
6 — сетка вторая
7 — сетка третья

1) First grid; 2) cathode and shield; 3) heater; 4) heater; 5) plate;
6) screen; 7) suppressor.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	170 ± 15 ma
Plate voltage (=)	120 v
Screen voltage (=)	120 v
Suppressor voltage (=)	0 v
Resistance in cathode circuit, self biasing	200 ohms
Plate current	5.5 ± 2 ma
Screen current	no more than 5.0 ma
Plate current for first-grid voltage of -10 v	no more than 40 μ a
Plate current for suppressor voltage of -15 v	no more than 50 μ a
Transconductance	3.85 ± 0.85 ma/v
Transconductance for heater voltage of 5.7 v	no less than 2.5 ma/v

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF INCREASED-RELIABILITY
RADIO-FREQUENCY PENTODE

6Zh2P-V

Resistance to External Effects

Minimum atmospheric pressure	20 mm Hg
Maximum centrifugal acceleration	100 g
Maximum acceleration*:	
brief vibrations	10 g
continuous vibration (up to 100 Hours)	6 g
Maximum acceleration, single shocks (up to 10 shocks)	500 g

*At frequency of 50 cps.

Note: Characteristics the same as for the 6Zh2P.

(Above material published April 1959, PKB, Sheet 2)

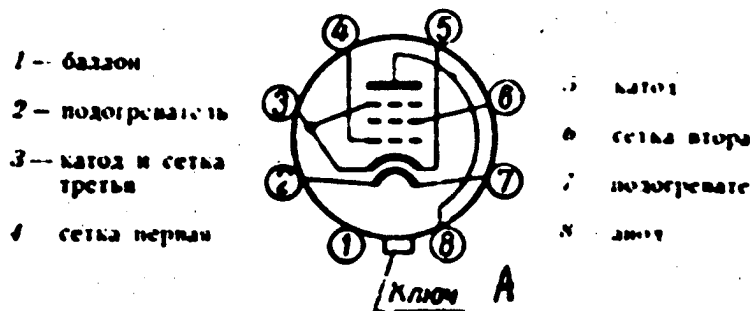
SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh3

Basic function radio-frequency voltage amplification.Construction metal.General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Maximum weight
 Base — octal, Tsl-1-8A
 Dimension drawing — 1M

67 mm
 33 mm
 45 grams

Connection Diagram for Electrodes and Pins

- 1) Envelope; 2) heater; 3) cathode and suppressor; 4) first grid;
 5) cathode; 6) screen; 7) heater; 8) plate; A) Key.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	300 ± 25 ma
Plate voltage (=)	250 v
Screen voltage (=)	150 v
First-grid voltage (=)	-1 v
Plate current	10.8 ± 2.6 ma
Cathode current	no more than 50 µa
Screen current	4 ± 2 ma
Transconductance	4.9 ± 1.0 ma/v
Transconductance at heater voltage of 5.7 v	no less than 3.1 ma/v
First-grid back current	no more than 1.0 µa
Cathode emission current*	no less than 95 ma
Leakage current between cathode and heater	no more than 20 µa
Cathode warm-up time	no more than 20 sec

*For plate and grid voltage of 20 v.

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF INCREASED-RELIABILITY
RADIO-FREQUENCY PENTODE

6Zh2P-V

Suppressor-grid mutual conductance for suppressor-grid voltage of -3 v.	no less than 0.5 ma/v
Third-grid mutual conductance for third-grid voltage of -20 v	no more than 20 μ a/v
Internal resistance	0.160 ^{+0.15} _{-0.08} megohm
Negative plate-current cutoff voltage (for plate current of not more than 5 μ a)	18-12 v
Negative first-grid electron-current cutoff voltage	no more than 1.2 v
First-grid back current*	no more than 0.1 μ a
Cathode emission current	no less than 25 ma
Leakage current between cathode and heater	no more than 15 μ a
Service life	500 hours
Service-life criteria:	
transconductance	no less than 2.5 ma/v
first-grid back current*	no more than 0.2 μ a

*For first-grid voltage of -2 v.

Interelectrode Capacitances

Input	4.5 + 0.5 μ mf
Output	2.4 $\pm$ 0.3 μ mf
Transfer	no more than 0.018 μ mf
First grid-screen	no more than 1.9 μ mf
Cathode-heater	no more than 4.5 μ mf

Maximum Permissible Operating Data

Maximum heater voltage {~ or =}	7.0 v
Minimum heater voltage {~ or =}	5.7 v
Maximum plate voltage (=)	200 v
Maximum plate voltage with tube cut off (for plate current not exceeding 5 μ a) (=)	225 v
Maximum screen voltage (=)	150 v
Maximum screen voltage with tube cut off (for plate current not exceeding 5 μ a) (=)	225 v
Maximum plate power dissipation	1.8 watts
Maximum screen power dissipation	0.85 watt
Maximum voltage between cathode and heater (=)	120 v
Maximum cathode current	20 ma
Minimum resistance in cathode circuit for self biasing	200 ohms
Maximum resistance in first-grid circuit	1 megohm
Maximum envelope temperature	125°C

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh3

First-grid insulation resistance	no less than 20 megohm
Plate insulation resistance	no less than 20 megohm
Service life	1000 hours
Service-life criteria:	
transconductance	no less than 3.2 ma/v

Interelectrode Capacitances

Input	8.5 + 1.7 μ f
Output	7.0 $\pm$ 2.1 μ f
Transfer	no more than 0.003 μ f

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	6.9 v
Minimum heater voltage ($\sim$ or $=$)	5.7 v
Maximum plate voltage ($=$)	330 v
Maximum screen voltage ($=$)	165 v
Maximum plate power dissipation	3.3 watts
Maximum screen power dissipation	0.7 watt
Maximum voltage between cathode and heater ($=$)	100 v

Standard Operating Conditions

Class A Amplifier

	No. 1	No. 2
Plate voltage ($=$), v	100	250
Screen voltage ($=$), v	100	150
First-grid voltage, v	-1	-1
First-grid voltage for plate current of 0.01 ma, v	-4	-5.5
Plate current, ma	5.3	10.8
Screen current, ma	2.1	4.1
Transconductance, ma/v	4	4.9
Internal resistance, megohms	0.35	0.9

← Change introduced.

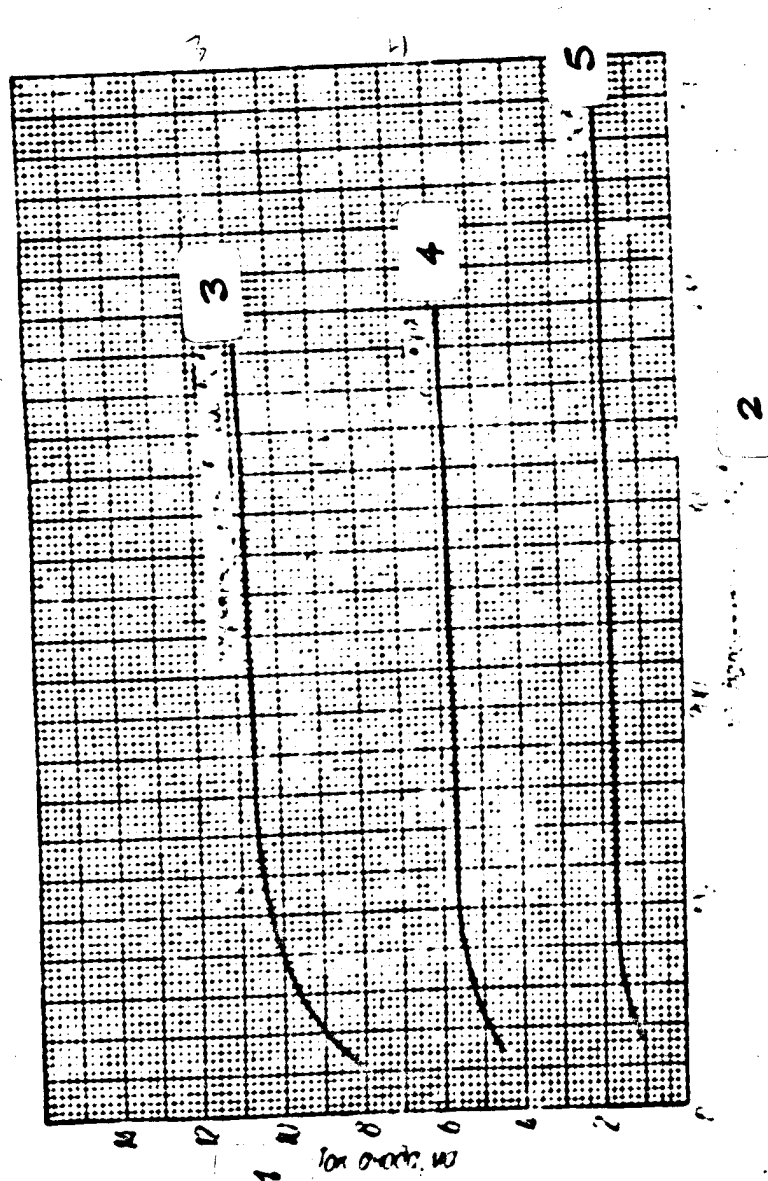
(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh3

Average Plate Characteristics

Heater voltage, 6.3 v; first-grid voltage, -1 v.



- 1) Plate current, ma; 2) plate voltage, v; 3) screen voltage, 150 v;
 4) 100 v; 5) 50 v.

(Above material published April 1959, PKB, G-1)

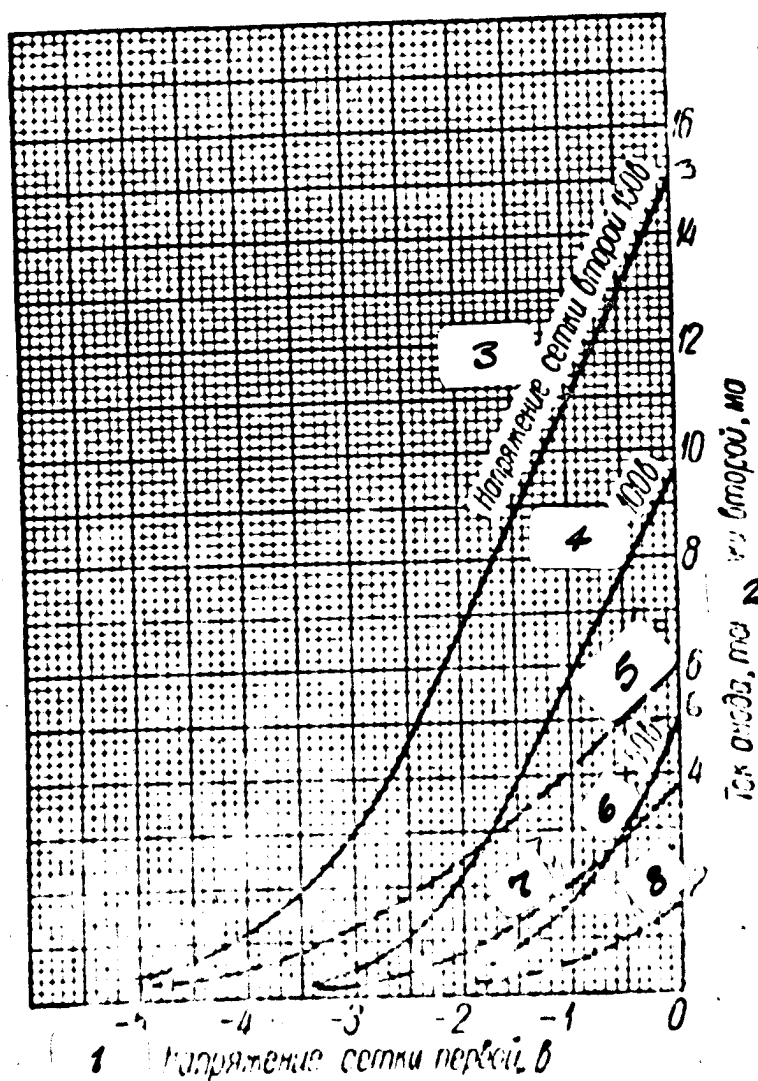
-486-

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh3

Average Characteristics

———— Plate-grid; ----- grid (for screen grid); heater voltage, 6.3 v; plate voltage, 250 v.



- 1) First-grid voltage, v; 2) plate current, screen current, ma;
 3) screen voltage, 150 v; 4) 100 v; 5) 150 v; 6) 50 v; 7) 100 v;
 8) 50 v.

(Above material published April 1959, PKB, G-3)

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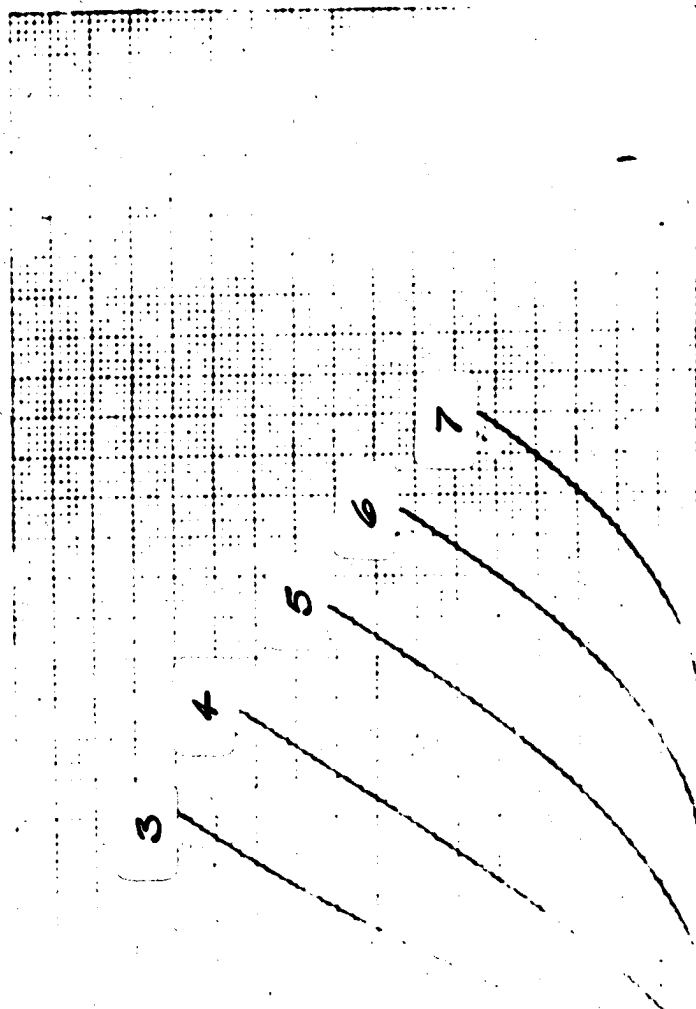
SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh3

Average Plate Characteristics

(Triode connection: screen connected with plate)

Heater voltage, 6.3 v.



1) Plate current, ma; 2) plate voltage, v; 3) first-grid voltage, 3 v;
4) 0 v; 5) -2 v; 6) -4 v; 7) -6 v.

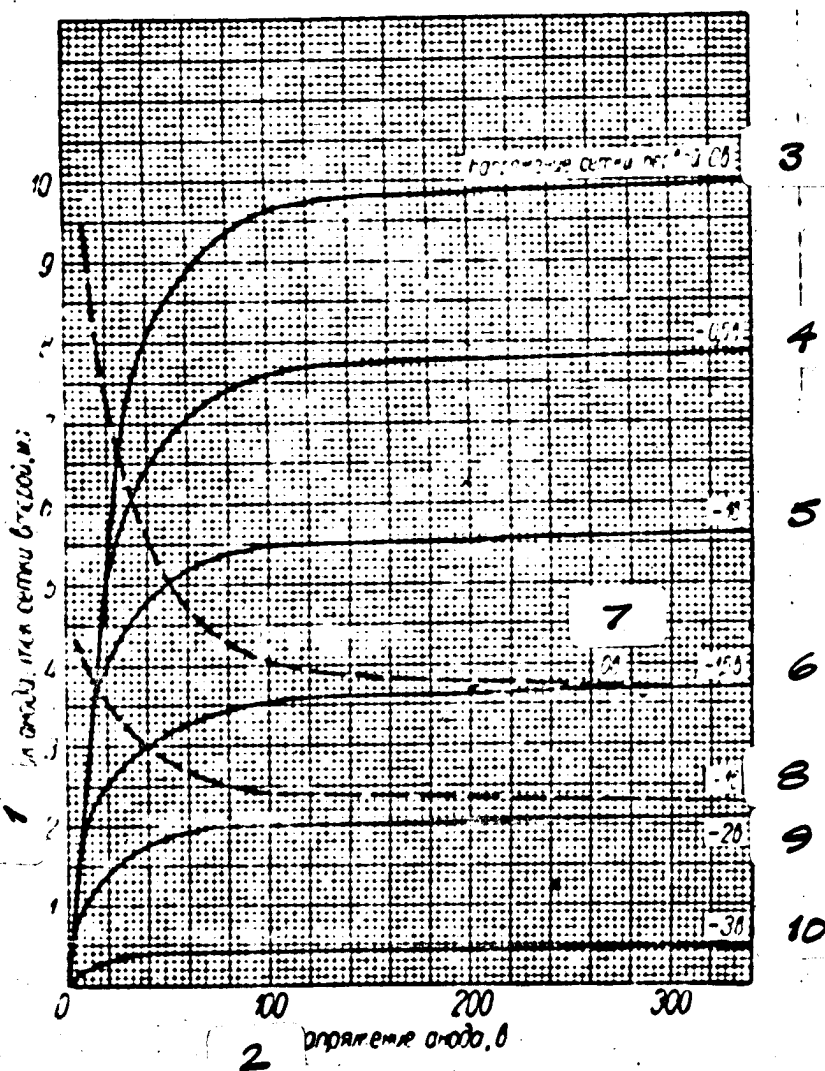
(Above material published April 1959, PKB, G-5)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh3

Average Characteristics

———— Plate; ----- grid-plate (for screen); heater voltage, 6.3 v;
screen voltage, 100 v.



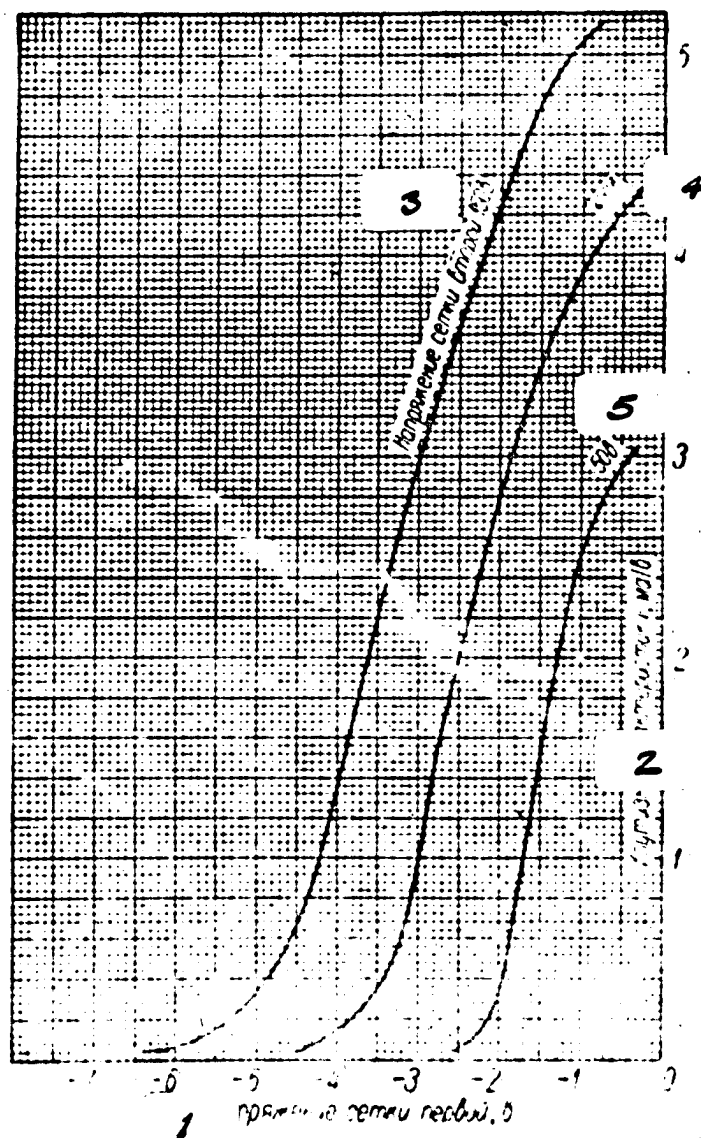
1) Plate current, screen current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) 0 v; 8) -1 v; 9) -2 v; 10) -3 v.

(Above material published April 1959, PKB, G-2)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh3

Average Mutual-Conductance Curves as a Function of First-Grid Voltage
 Heater voltage, 6.3 v; plate voltage, 250 v.



1) First-grid voltage, v; 2) mutual conductance, ma/v; 3) screen voltage, 150 v; 4) 100 v; 5) 50 v.

(Above material published April 1959, PKB, G-4)

PENTODE-TYPE RADIO-FREQUENCY TETRODE

6Zh3P

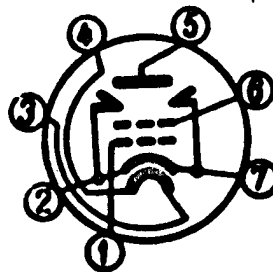
Basic function broad-band radio-frequency voltage amplification.Construction glass miniature.General Data

Cathode — Oxide-coated heater-type
 Maximum height
 Maximum diameter
 Maximum weight
 Number of pins
 Dimension drawing — 4P.

58 mm
 19 mm
 12 grams
 7

Connection Diagram for Electrodes and Pins

1 — сетка первая
 2 — катод и экран
 3 — подогреватель
 4 — подогреватель



5 — анод
 6 — сетка вторая
 7 — катод и экран

1) First grid; 2) cathode and shield; 3) heater; 4) heater; 5) plate;
 6) screen; 7) cathode and shield.

Electrical Data

Heater voltage ($\sim$ or $=$)	6.3 v
Filament current	300 ± 20 ma
Plate voltage ($=$)	250 v
Screen voltage ($=$)	150 v
Resistance in cathode circuit for self-biasing	200 ohms
Plate current	7.0 ± 1.8 ma
Plate current for first-grid voltage of -9 v	no more than 30 μ a
Screen current	2.0 ± 0.7 ma
Transconductance	5.0 ± 1.0 ma/v
Transconductance at heater voltage of 5.5 v	no less than 3.25 ma/v
Internal resistance	0.8-0.3 megohm
Negative first-grid electron-current cutoff voltage	no more than 1.3 v
First-grid back current*	no more than 1.0 μ a

*For first-grid voltage of -2 v.

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

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PENTODE-TYPE RADIO-FREQUENCY TETRODE

6Zh3P

First-grid thermionic emission current*	no more than 1.0 μ a
Cathode emission current	no less than 25 ma
Insulation resistance between cathode and heater	no less than 8 megohm
First-grid insulation resistance	no less than 10 megohm
Plate insulation resistance	no less than 10 megohm
Service life	500 hours
Service-life criteria:	
transconductance	no less than 3.25 ma/v
first-grid back current**	no more than 4.0 μ a

*For heater voltage of 7.5 v and first-grid voltage of -9 v.

**For first-grid voltage of -2 v.

Interelectrode Capacitances*

Input	6.5 $\pm$ 1.3 μ mf
Output	1.4 $\pm$ 0.4 μ mf
Transfer	no more than 0.25 μ mf

*Measured inside shield.

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or =)	7.0 v
Minimum heater voltage ($\sim$ or =)	5.7 v
Maximum plate voltage (=)	330 v
Maximum screen voltage (=)	165 v
Maximum plate power dissipation	2.5 watts
Maximum screen power dissipation	0.55 watt
Maximum voltage between cathode and heater (=)	100 v
Minimum resistance in cathode circuit with self biasing	200 ohms
Maximum resistance in first-grid circuit	0.5 megohm ←

← Change introduced.

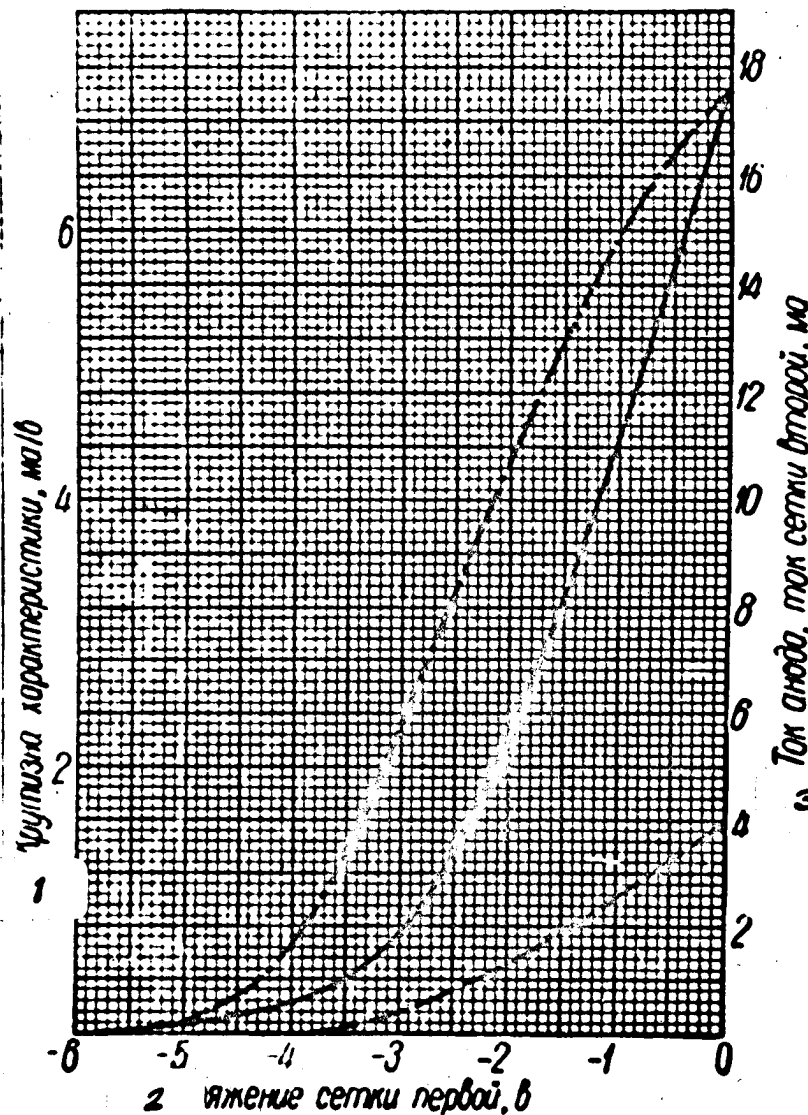
(Above material published April 1959, PKB, Sheet 1)

PENTODE-TYPE RADIO-FREQUENCY TETRODE

6Zh3P

Average Characteristics

———— Plate-grid; ----- grid (for screen grid); -.-.-.- mutual conductances; heater voltage, 6.3 v; plate voltage, 250 v; screen voltage, 100 v.



1) Mutual conductances, ma/v; 2) first-grid voltage, v; 3) plate current, screen current, ma.

(Above material published April 1959, PKB, G-2)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh4

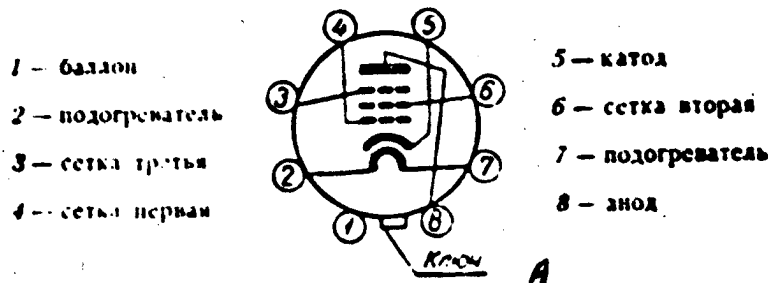
Basic function radio-frequency voltage amplification in broad-band amplifiers.

Construction metal.

General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Maximum weight
 Base — octal, Tsl-1-8A
 Dimension drawing — 2M

67 mm
 33 mm
 43 grams

Connection Diagram for Electrodes and Pins

1) Envelope; 2) heater; 3) suppressor; 4) first grid; 5) cathode;
 6) screen; 7) heater; 8) plate; A) Key.

Electrical Data

Heater voltage ($\sim$ or $=$)	6.3 v
Heater current	450 ± 25 ma
Plate voltage ($=$)	300 v
Suppressor voltage ($=$)	0 v
Screen voltage ($=$)	150 v
Resistance in cathode circuit	160 ohms
Plate current	10.25 ± 2.25 ma
Plate current for first-grid voltage of -6 v	no more than 900 μ a
Screen current	2.2 ± 1.0 ma
Transconductance	9.0 ± 2.0 ma/v
Transconductance for heater voltage of 5.5 v	no less than 5.5 ma/v
Internal resistance	about 1 megohm
Suppressor back current*	no more than 6.0 μ a
Cathode emission current	no less than 40 ma

*For suppressor voltage of -2 v.

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh4

Cathode warm-up time	no more than 30 sec
Leakage current between cathode and heater	no more than 20 μ a
Insulation resistance for first grid	no less than 10 megohm
Plate insulation resistance	no less than 10 megohm
Service life	500 hours
Service-life criteria:	
transconductance	no less than 5.8 ma/v
suppressor back current*	no more than 6.0 μ a

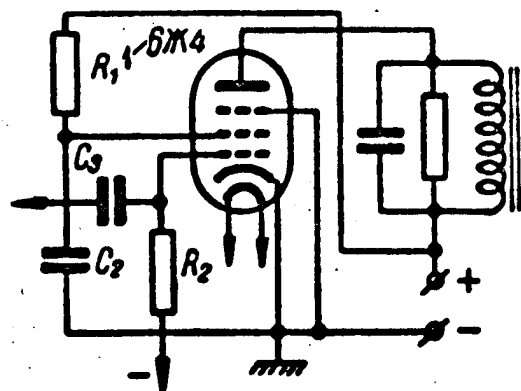
*For suppressor voltage of -2 v.

Interelectrode Capacitances

Input	9.5 $\pm$ 2 μ mf
Output	5 $\pm$ 1.5 μ mf
Transfer	no more than 0.015 μ mf

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	7.0 v
Minimum heater voltage ($\sim$ or $=$)	5.7 v
Maximum plate voltage ($=$)	330 v
Maximum screen voltage ($=$)	165 v
Maximum plate power dissipation	3.3 watts
Maximum screen power dissipation	0.45 watt
Maximum voltage between cathode and heater ($=$)	100 v

Standard Operating ConditionsTuned Broad-Band Amplifier CircuitsFirst Circuit

$R_1 = 53 \text{ kohm}$; $R_2 < 0.1 \text{ megohm}$; 1) 6Zh4.

(Above material published April 1959, PKB, Sheet 1)

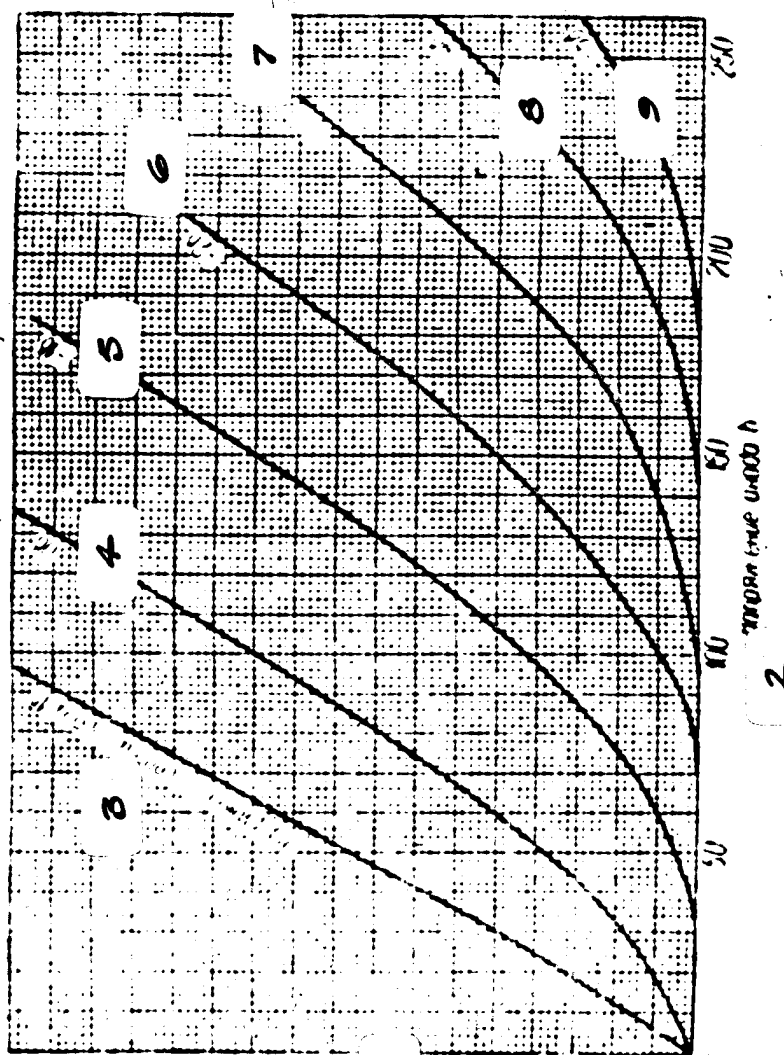
SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh4

Average Plate Characteristics

(triode connection)

Heater voltage, 6.3 v; suppressor voltage, 0 v.



- 1) Plate current, ma; 2) plate voltage, v; 3) first-grid voltage, 1 v;
 4) 0 v; 5) -1 v; 6) -2 v; 7) -3 v; 8) -4 v; 9) -5 v.

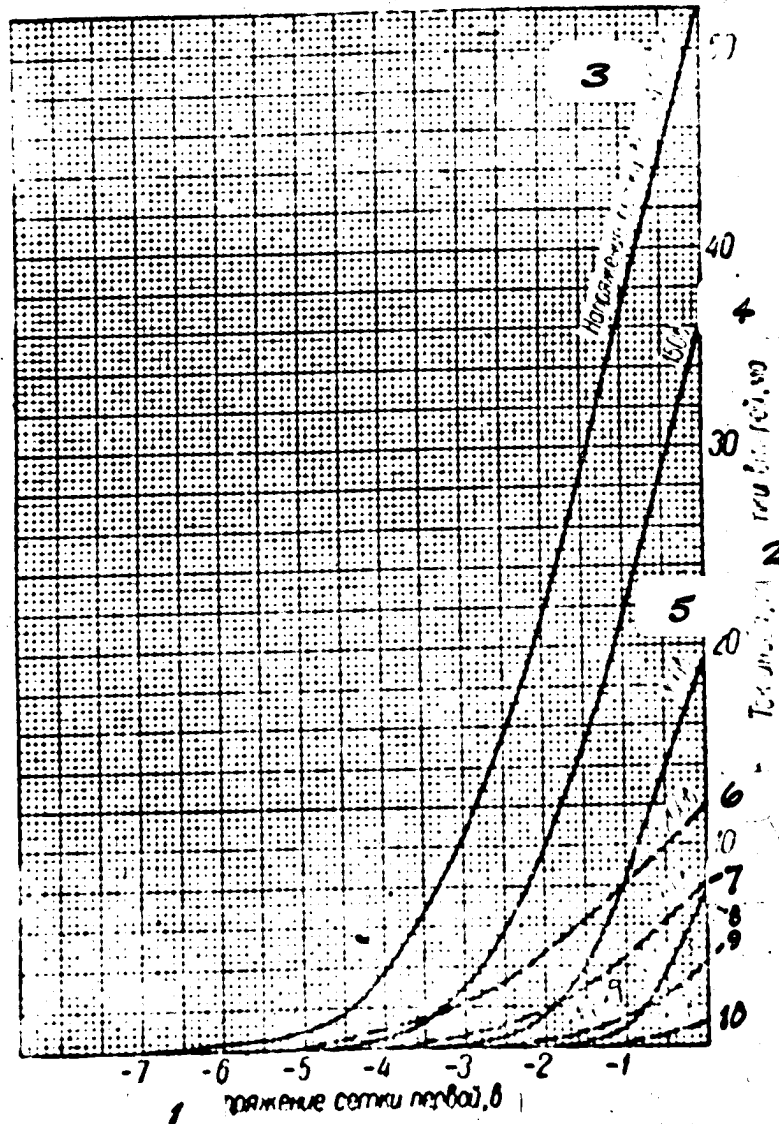
(Above material published April 1959, PKB, G-1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh4

Average Characteristics

———— Plate-grid; ----- grid (for screen grid); heater voltage, 6.3 v; plate voltage, 300 v; suppressor voltage, 0 v.



- 1) First-grid voltage, v; 2) plate current, screen current, ma;
 3) screen voltage, 200 v; 4) 150 v; 5) 100 v; 6) 200 v; 7) 150 v;
 8) 50 v; 9) 100 v; 10) 50 v.

(Above material published April 1959, PKB, G-3)

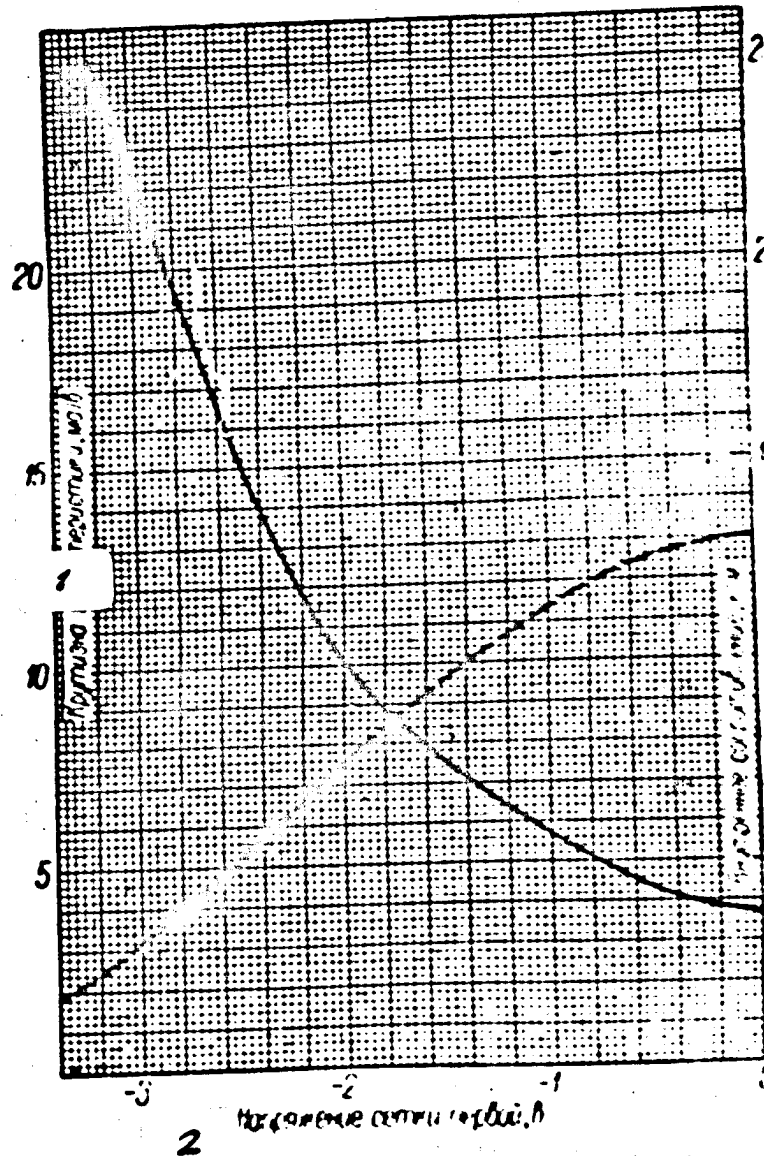
SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh4

Average Characteristics

(As a function of first-grid voltage)

———— Internal resistance; ----- transconductance; heater voltage, 6.3 v; plate voltage, 300 v; screen voltage, 150 v; suppressor voltage, 0 v.



1) Transconductance, ma/v; 2) first-grid voltage, v; 3) internal resistance, ohms.

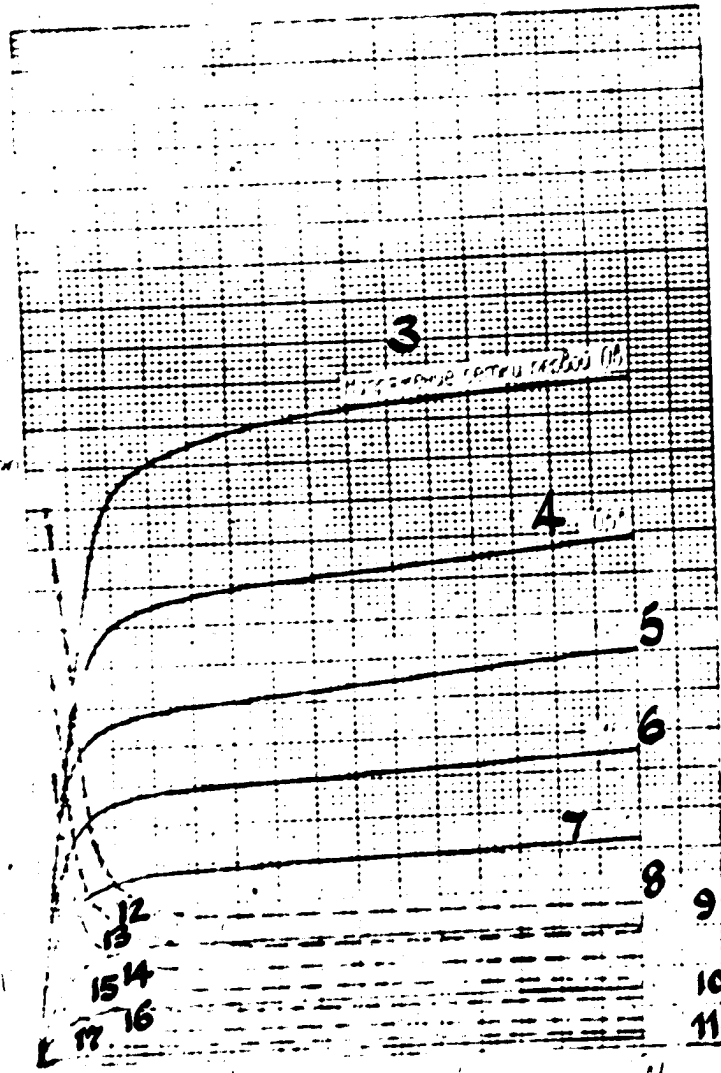
(Above material published April 1959, PKB, G-5)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh4

Average Characteristics

———— Plate; ----- Grid-plate (for screen); heater voltage, 6.3 v;
screen voltage, 150 v; suppressor voltage, 0 v.



1) Plate current, screen current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) -2 v; 8) 0 v; 9) -2.5 v; 10) -3 v; 11) -4 v; 12) -0.5 v; 13) -1 v; 14) -1.5 v; 15) -2 v; 16) -2.5 v; 17) -3 v.

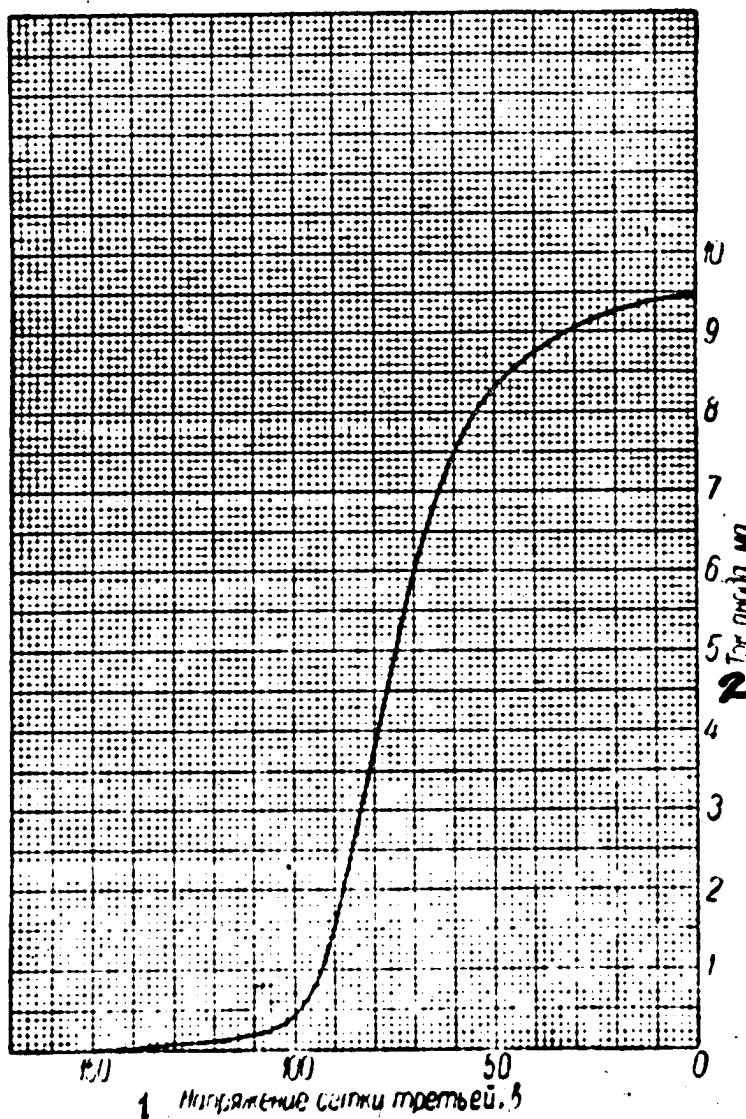
(Above material published April 1959, G-2)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh4

Average Plate-Grid Curve

Heater voltage, 6.3 v; plate voltage, 300 v; screen voltage, 150 v; cathode-circuit resistance, 160 ohms.



1) Suppressor voltage, v; 2) plate current, ma.

(Above material published April 1959, PKB, G-4)

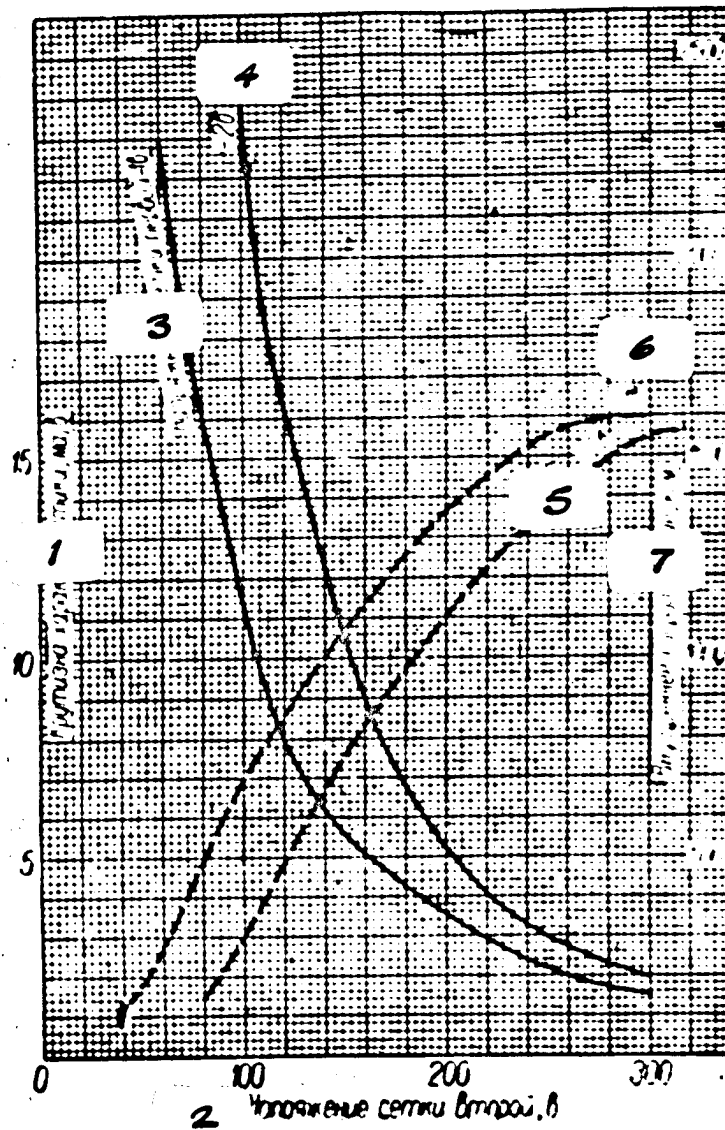
SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh4

Average Characteristics

(As a function of screen voltage)

———— Internal resistance; ----- transconductance; heater voltage, 6.3 v; plate voltage, 300 v; suppressor voltage, 0 v.



1) Transconductance, ma/v; 2) screen voltage, v; 3) first-grid voltage, -1 v; 4) -2 v; 5) -2 v; 6) -1 v; 7) internal resistance, kohm.

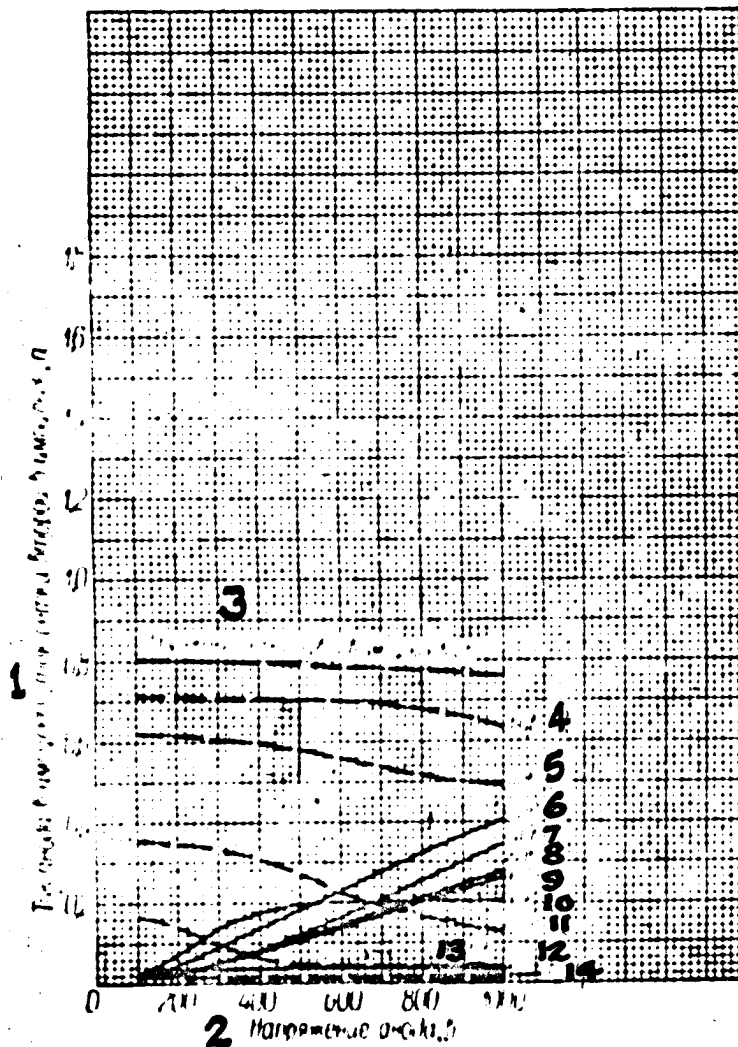
(Above material published April 1959, PKB, G-6)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh4

Average Pulse Characteristics

———— Plate; ----- grid-plate (for screen grid); heater voltage, 6.3 v; screen voltage, 150 v; suppressor voltage, 0 v; pulse length, 2 μ sec; repetition rate, 100 cps.



1) Plate current, pulsed, screen current, pulsed, amp; 2) plate voltage, v; 3) first-grid voltage, pulsed, 100 v; 4) 60 v; 5) 40 v; 6) 20 v; 7) 40 v; 8) 60 v; 9) 100 v; 10) 10 v; 11) 20 v; 12) 0 v; 13) 10 v; 14) 0 v.

(Above material published April 1959, PKB, G-7)

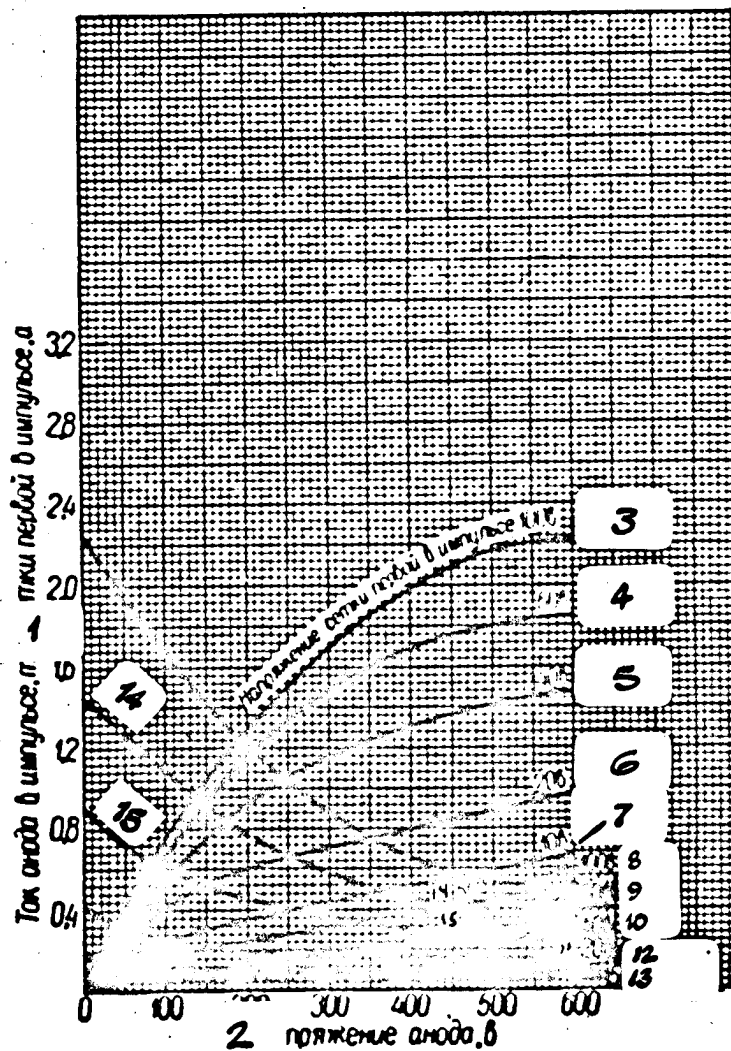
SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh4

Average Pulse Characteristics

(triode connection)

———— Plate; ----- grid-plate; heater voltage, 6.3 v; pulse length, 2 μ sec; repetition rate, 100 cps.



1) Plate current, pulsed, screen current, pulsed, amp; 2) plate voltage, v; 3) first-grid voltage, pulsed, 100 v; 4) 60 v; 5) 40 v; 6) 20 v; 7) 10 v; 8) 100 v; 9) 60 v; 10) 40 v; 11) 20 v; 12) 10 v; 13) 5 v; 14) 5 v; 15) 0 v.

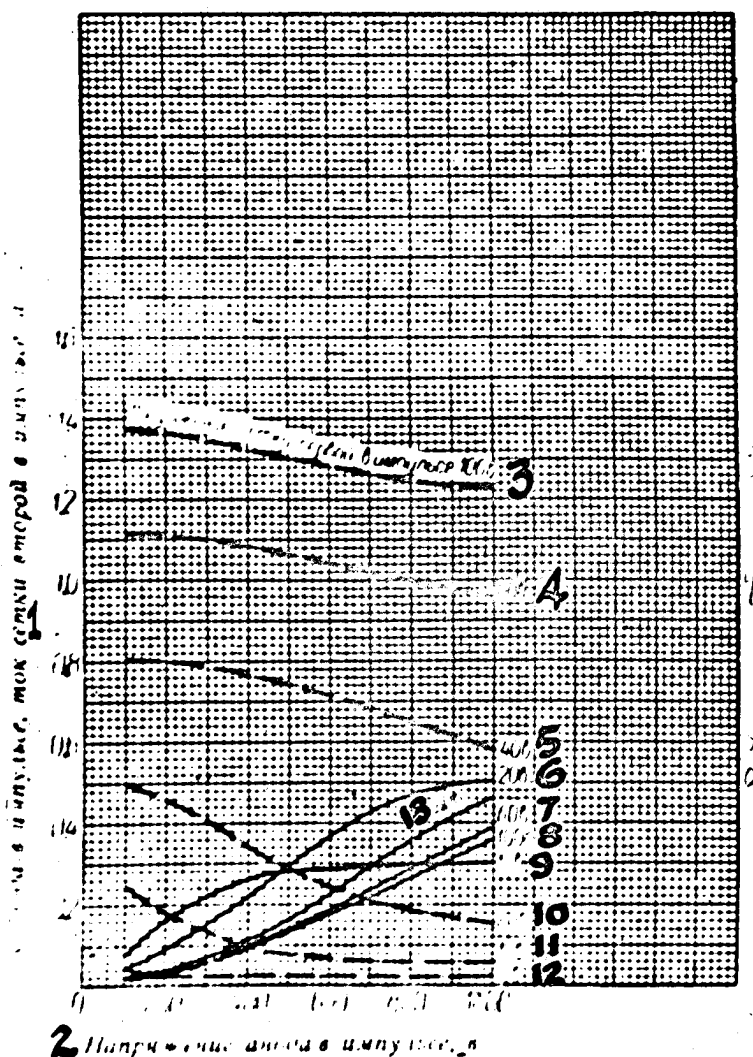
(Above material published April 1959, PKB, G-9)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh4

Average Pulse Characteristics

———— Plate; ----- Plate-grid (for screen grid); heater voltage, 6.3 v; screen voltage, 300 v; suppressor voltage, 0 v; pulse length, 2 μ sec; repetition rate, 100 cps.



1) Plate current, pulsed, screen current, pulsed, amp; 2) plate voltage, pulsed, v; 3) first-grid voltage, pulsed, 100 v; 4) 60 v; 5) 40 v; 6) 20 v; 7) 60 v; 8) 100 v; 9) 10 v; 10) 20 v; 11) 10 v; 12) 0 v; 13) 40 v.

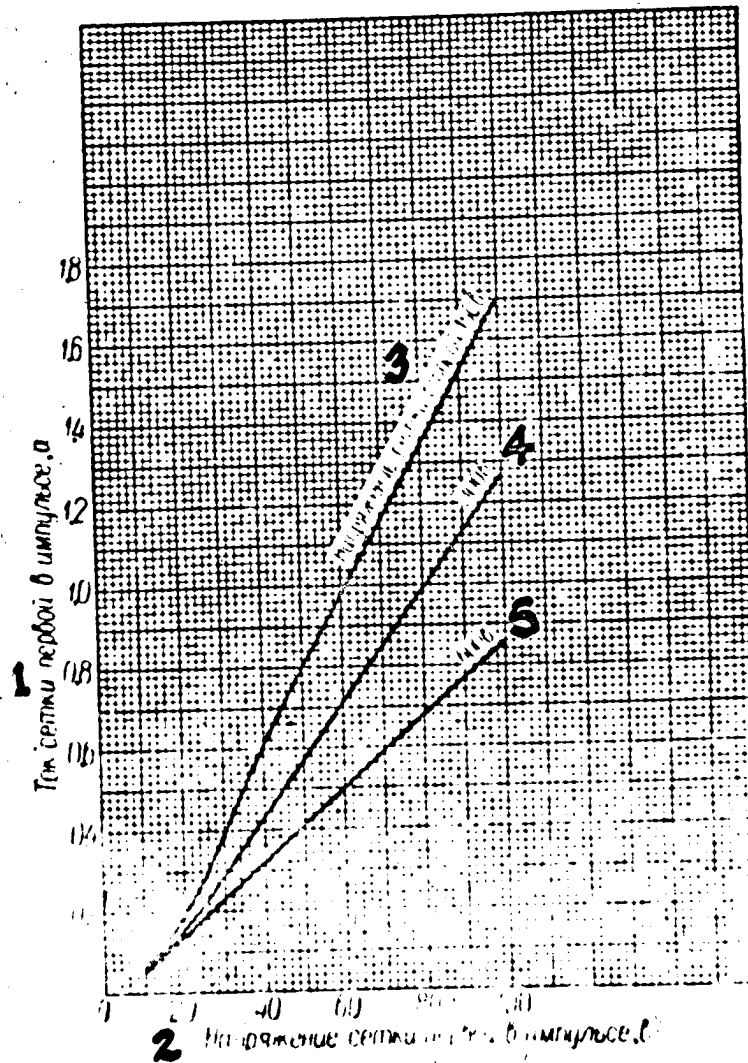
(Above material published April 1959, PKB, G-8)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh4

Average Plate Pulse Characteristics

Heater voltage, 6.3 v; plate voltage, 300 v; pulse length, 2 μ sec; repetition rate, 100 cps.



- 1) First-grid current, pulsed, amp; 2) first-grid voltage, pulsed, v;
 3) screen voltage, 150 v; 4) 300 v; 5) 600 v.

(Above material published April 1959, PKB, G-10)

LONG-LIFE SHARP-CUTOFF RADIO-FREQUENCY PENTODE 6Zh4-Ye

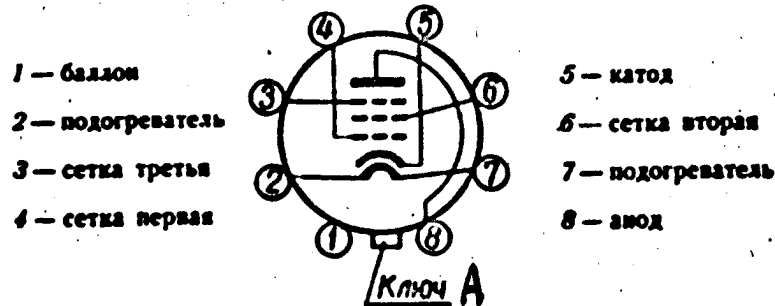
Basic function radio-frequency voltage amplification in broad-band amplifiers.

Construction metal.

General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Maximum weight
 Base — octal, Tsl-1-8A
 Dimension drawing — 2M

67 mm
 33 mm
 37 grams

Connection Diagram for Electrodes and Pins

1) Envelope; 2) heater; 3) suppressor; 4) first grid; 5) cathode;
 6) screen; 7) heater; 8) plate; A) Key.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	450 ± 25 ma
Plate voltage (=)	300 v
Suppressor voltage (=)	0 v
Screen voltage (=)	150 v
Resistance in cathode circuit for self biasing	160 ohms
Plate current	9.2 ± 1.8 ma
Plate current with first-grid voltage of -6 v	no more than 900 μ a
Screen current	2.2 ± 1.0 ma
Transconductance	8.5 ± 1.5 ma/v
Transconductance at heater voltage of 5.5 v	no less than 5.6 ma/v
Cathode emission current	no less than 40 ma
Suppressor back current*	no more than 6.0 μ a

*With suppressor voltage of -2 v.

(Above material published April 1959, PKB, Sheet 1)

LONG-LIFE SHARP-CUTOFF RADIO-FREQUENCY PENTODE 6Zh4-Ye

Leakage current between cathode and heater	no more than 20 μ a
Cathode warm-up time	no more than 30 sec
Vibration-noise voltage*	no more than 500 mv (eff)
First-grid insulation resistance	no less than 10 megohm
Plate insulation resistance	no less than 10 megohm
Service life	5000 hours
Service-life criterion: transconductance	no less than 5.6 ma/v

*For plate load resistance of 2 kohm, at vibration frequency of 12-50 cps and 6 g acceleration.

Interelectrode Capacitances

Input	$11 \pm 2.2 \mu\text{f}$
Output	$4.5 \pm 0.9 \mu\text{f}$
Transfer	no more than 0.015 μf

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	6.6 v
Minimum heater voltage ($\sim$ or $=$)	6.0 v
Maximum plate voltage ($=$)	330 v
Maximum screen voltage ($=$)	165 v
Maximum plate power dissipation	2.5 watts
Maximum screen power dissipation	0.35 watt
Maximum voltage between cathode and heater ($=$)	200 v

Resistance to External Effects

Atmospheric pressure	41 mm Hg
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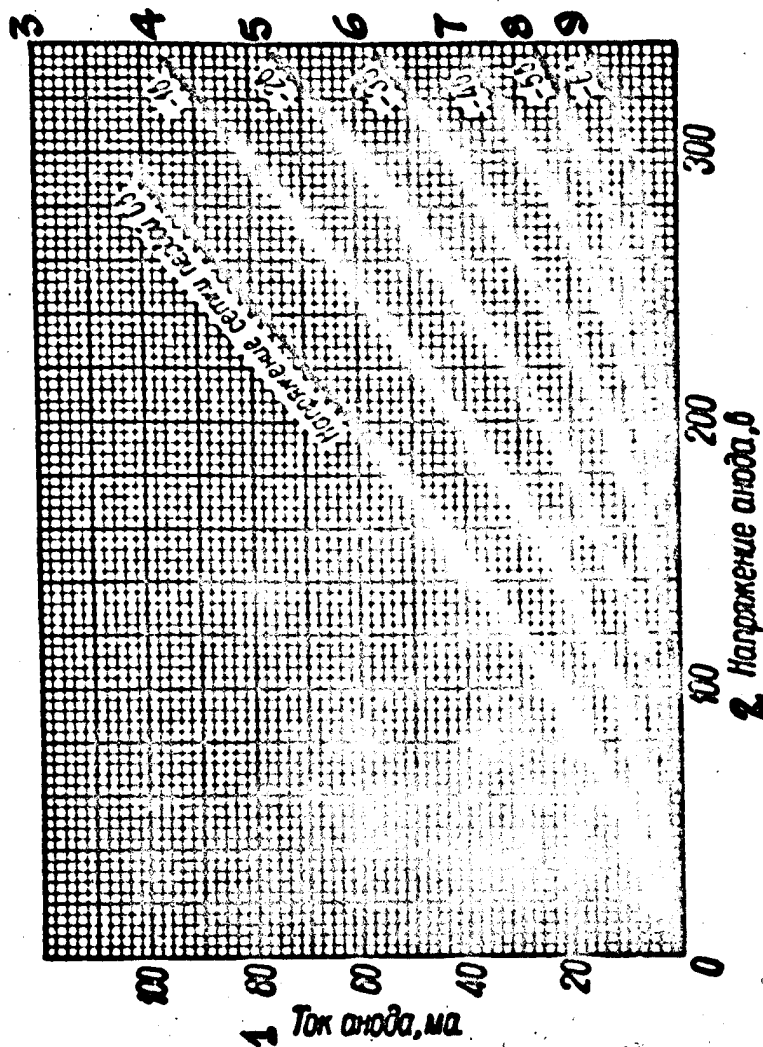
(Above material published April 1959, PKB, Sheet 1)

LONG-LIFE SHARP-CUTOFF RADIO-FREQUENCY PENTODE 6Zh4-Ye

Average Plate Characteristics

(triode connection: second and third grids connected to plate)

Heater voltage, 6.3 v.



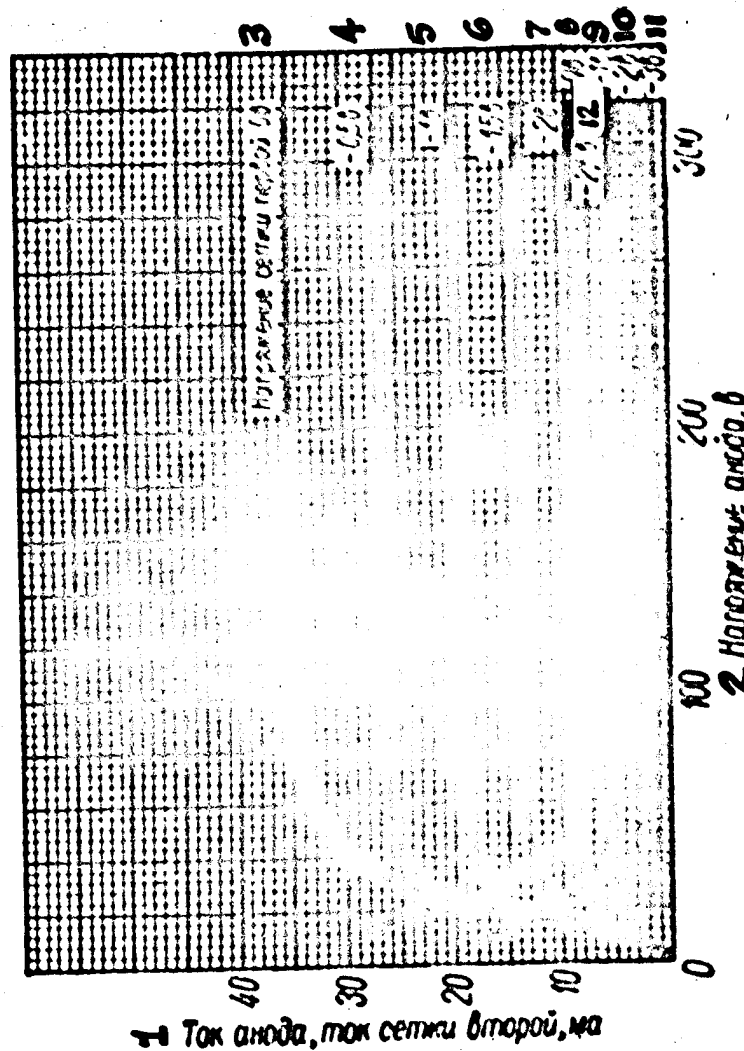
- 1) Plate current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v;
 4) -1 v; 5) -2 v; 6) -3 v; 7) -4 v; 8) -5 v; 9) -6 v.

(Above material published April 1959, PKB, G-1)

LONG-LIFE SHARP-CUTOFF RADIO-FREQUENCY PENTODE 6Zh4-Ye

Average Characteristics

———— Plate; ----- Grid-plate (for screen grid); heater voltage, 6.3 v; screen voltage, 150 v; suppressor voltage, 0 v.



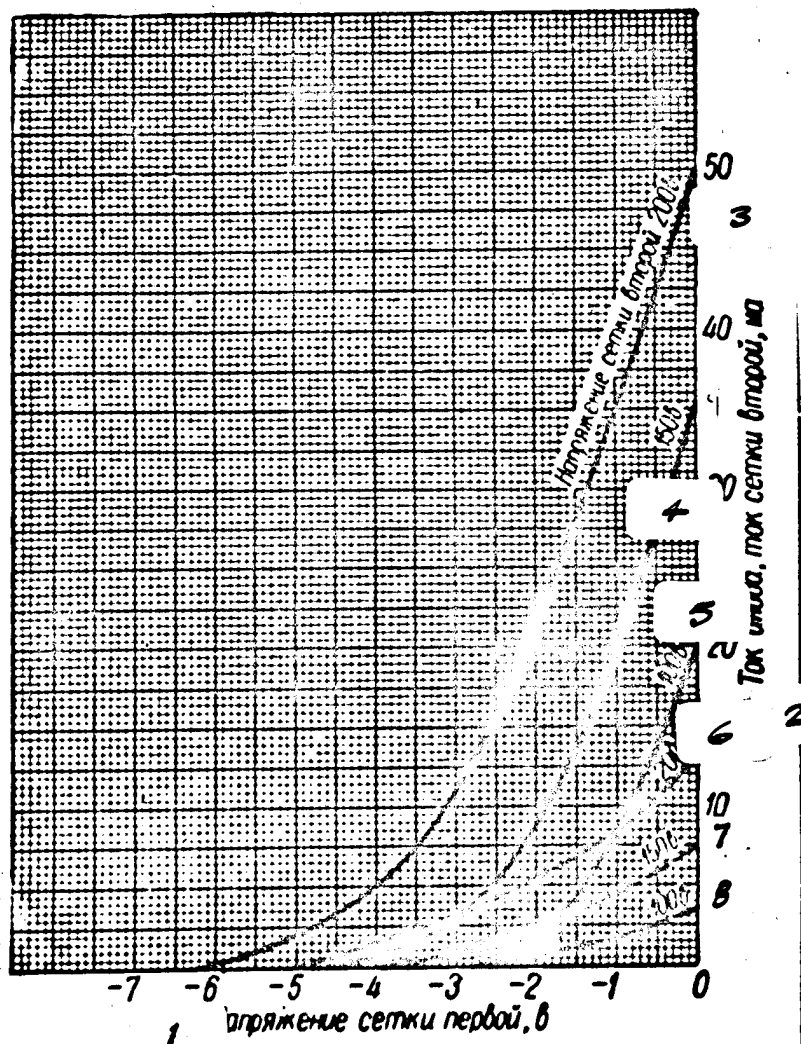
1) Plate current, screen current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) -2 v; 8) 0 v; 9) -1.5 v; 10) -2 v; 11) -3 v; 12) -2.5 v.

(Above material published April 1959, PKB, G-3)

LONG-LIFE SHARP-CUTOFF RADIO-FREQUENCY PENTODE 6Zh4-Ye

Average Characteristics

———— Plate-grid; ----- grid (for screen grid); heater voltage, 6.3 v; plate voltage, 300 v; suppressor voltage, 0 v.



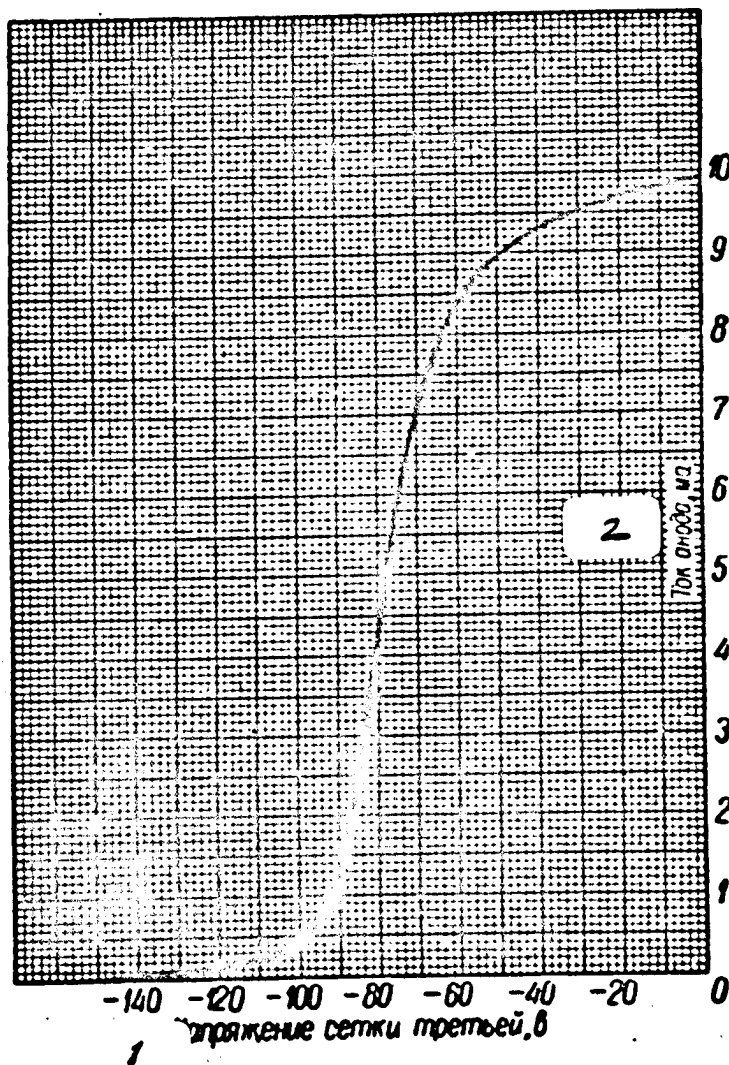
- 1) First-grid voltage, v; 2) plate current, screen current, ma;
 3) screen voltage, 300 v; 4) 150 v; 5) 100 v; 6) 200 v; 7) 150 v;
 8) 100 v.

(Above material published April 1959, PKB, G-2)

LONG-LIFE SHARP-CUTOFF RADIO-FREQUENCY PENTODE 6Zh4-Ye

Average Plate-Grid Characteristic Curve

Heater voltage, 6.3 v; plate voltage, 300 v; screen voltage, 150 v; resistance in cathode circuit, 160 ohms.



1) Suppressor voltage, v; 2) plate current, ma.

(Above material published April 1959, PKB, G-4)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh4P

Basic function radio-frequency voltage amplification.Construction glass miniature.General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Maximum weight
 Number of pins
 Dimension drawing — 8P

65 mm
 19 mm
 13 grams
 7

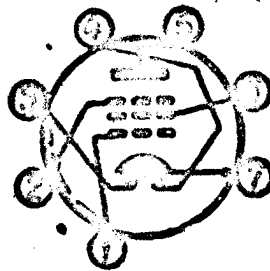
Connection Diagram for Electrodes and Pins

1 — сетка первая

2 — сетка третья,
экран

3 — подогреватель

4 — подогреватель



5 — анод

6 — сетка вторая

7 — катод

- 1) First grid; 2) third grid, screen; 3) heater; 4) heater; 5) plate;
 6) screen; 7) cathode.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	300 ± 25 ma
Plate voltage (=)	250 v
Screen voltage (=)	150 v
Resistance in cathode circuit with self biasing	68 ohms
Plate current	11 ± 3.3 ma
Plate current at beginning of curve with first-grid voltage of -5 v	no more than 1000 µa
Screen current	4.5 ± 1.7 ma
Transconductance	5.7 ^{+1.3} _{-0.9} ma/v
Internal resistance	about 0.9 megohm
First-grid back current	no more than 0.5 µa
Leakage current between cathode and heater	no more than 20 µa
Service life	500 hours
Service-life criteria:	
transconductance	no less than 3.8 ma/v
first-grid back current	no more than 2 µa

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh4P

Interelectrode Capacitances

Input	6.3 μf
Output	6.3 μf
Transfer	no more than 0.0035 μf

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	7 v
Minimum heater voltage ($\sim$ or $=$)	5.7 v
Maximum plate voltage ($=$)	300 v
Maximum screen voltage ($=$)	150 v
Maximum plate power dissipation	3.5 watts
Maximum screen power dissipation	0.9 watt
Maximum cathode current	20 ma
Maximum voltage between cathode and heater ($=$)	90 v
Maximum resistance in first-grid circuit	0.5 megohm

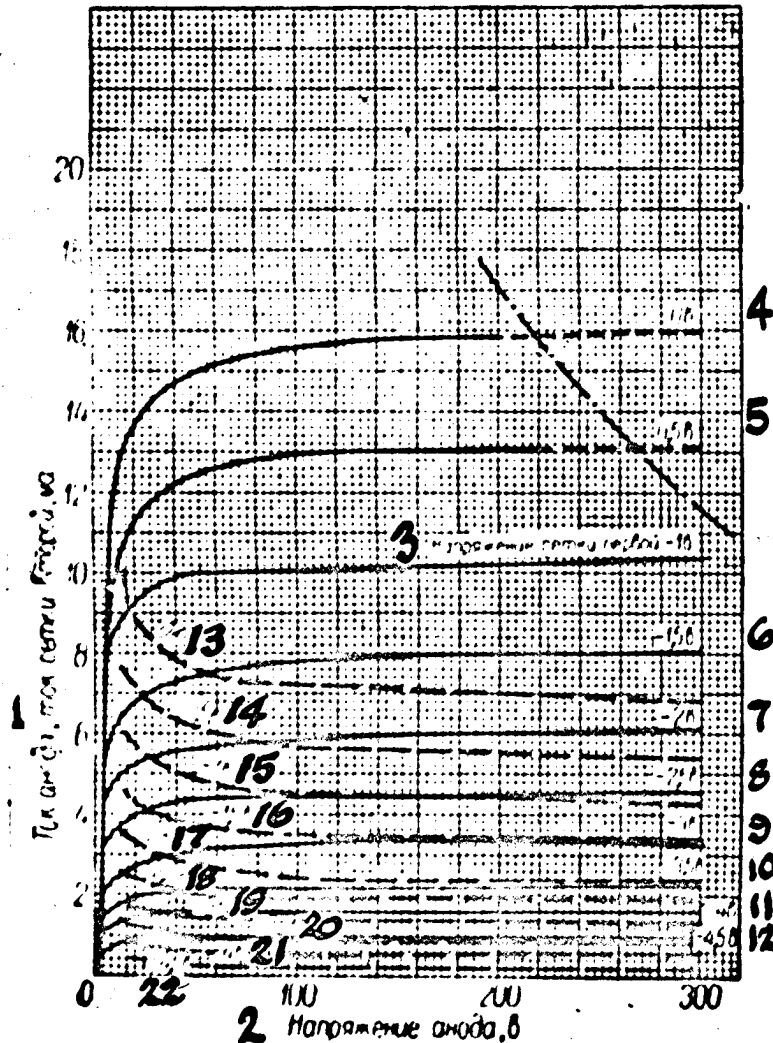
(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh4P

Average Characteristics

———— Plate; ----- grid-plate (for screen grid); - - - - - maximum permissible plate power dissipation; heater voltage, 6.3 v; screen voltage, 150 v; suppressor voltage, 0 v.



1) Plate current, screen current, ma; 2) plate voltage, v; 3) first-grid voltage, -1 v; 4) 0 v; 5) 0.5 v; 6) -1.5 v; 7) -2 v; 8) -2.5 v; 9) -3 v; 10) -3.5 v; 11) -4 v; 12) -4.5 v; 13) 0 v; 14) -0.5 v; 15) -1 v; 16) -1.5 v; 17) -2 v; 18) -2.5 v; 19) -3 v; 20) -3.5 v; 21) -4 v; 22) -4.5 v.

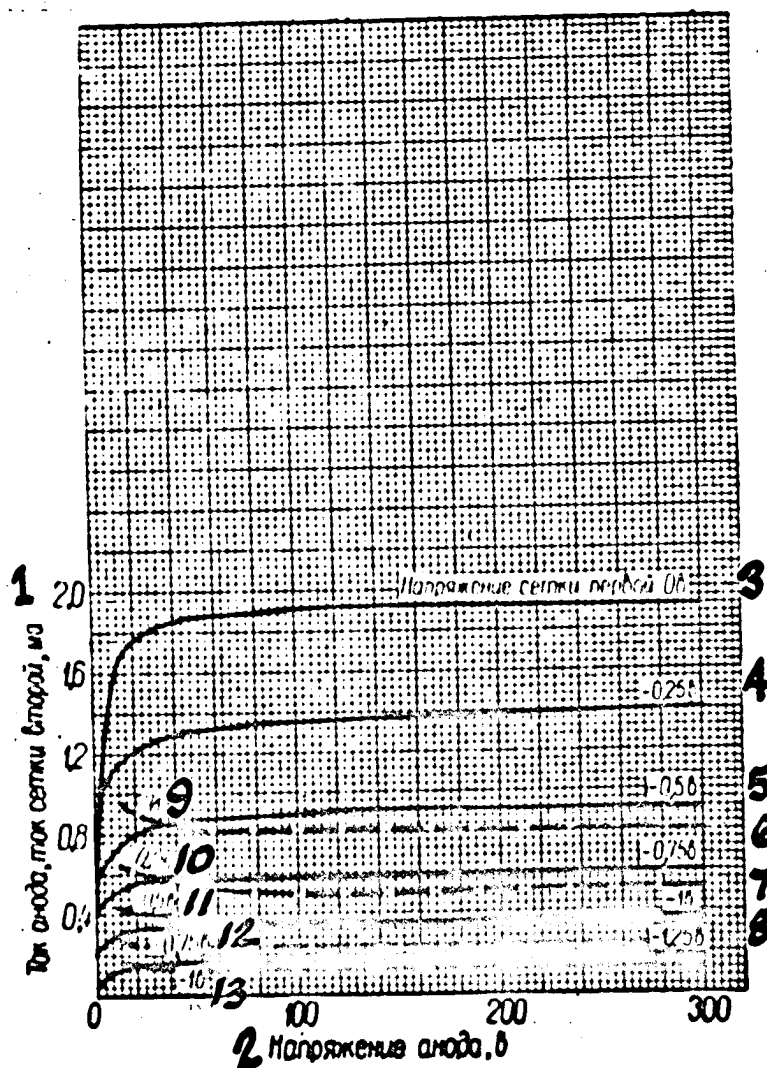
(Above material published April 1959, PKB, G-1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh4P .

Average Characteristics

———— Plate; ----- grid plate (for screen-grid); heater voltage, 6.3 v; screen voltage, 50 v; suppressor voltage, 0 v.



1) Plate current, screen current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -0.25; 5) -0.5; 6) -0.75 v; 7) -1 v; 8) -1.25 v; 9) 0 v; 10) -2.5 v; 11) -2.5 v; 12) -0.75 v; 13) -1 v.

(Above material published April 1959, PKB, G-3)

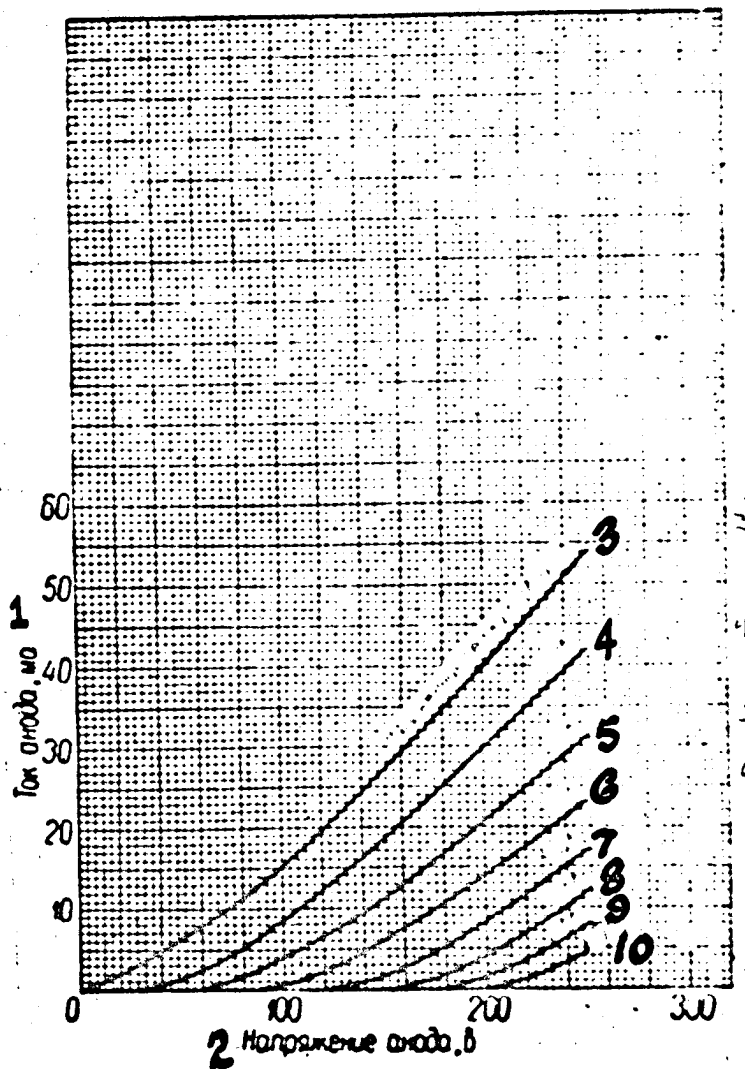
SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh4P

Average Plate Characteristics

(triode connection)

Heater voltage, 6.3 v.



- 1) Plate current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v;
 4) -1 v; 5) -2 v; 6) -3 v; 7) -4 v; 8) -5 v; 9) -6 v; 10) -7 v.

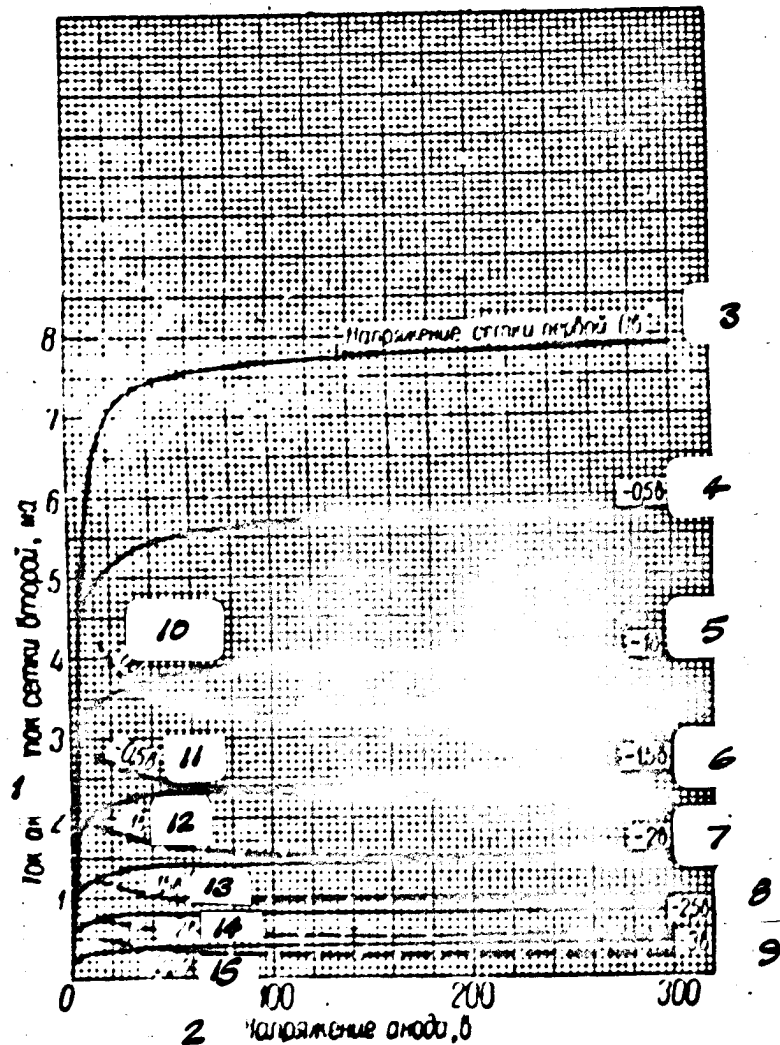
(Above material published April 1959, PKB, G-5)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh4P

Average Characteristics

———— Plate; ----- grid-plate (for screen grid); heater voltage, 6.3 v; screen voltage, 100 v; suppressor voltage, 0 v.



1) Plate current, screen current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) -2 v; 8) -2.5 v; 9) -3 v; 10) 0 v; 11) -0.5 v; 12) -1 v; 13) -1.5 v; 14) -2 v; 15) -2.5 v.

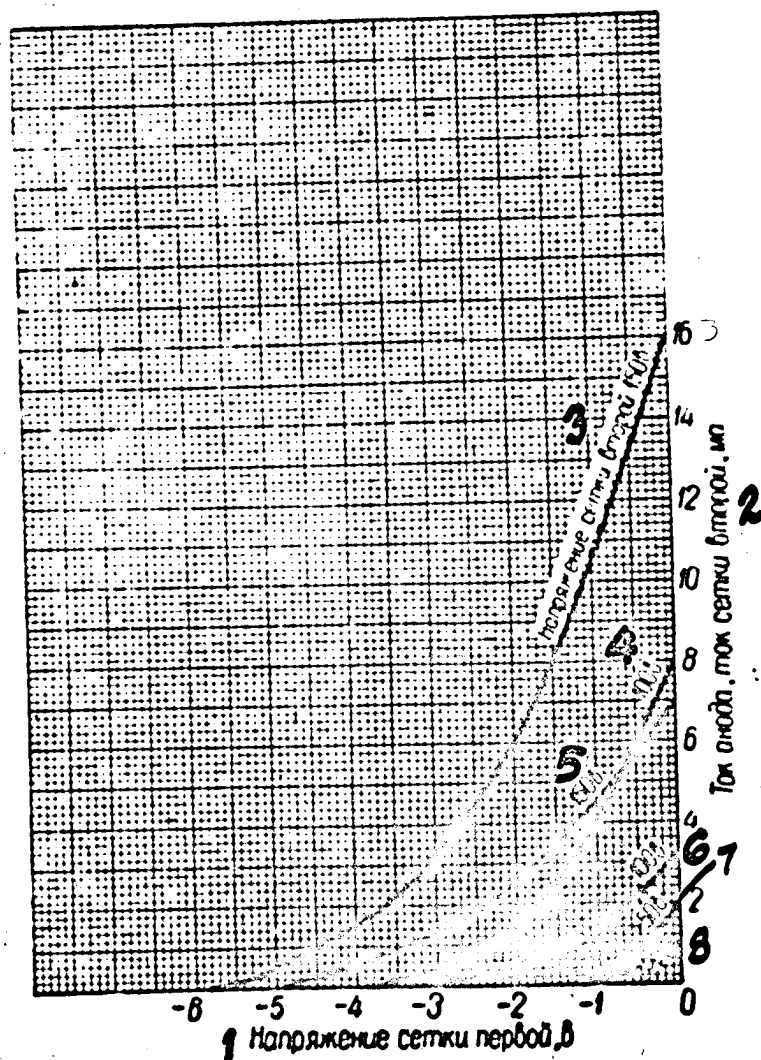
(Above material published April 1959, PKB, G-2)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh4P

Average Characteristics

———— Plate-grid; ----- grid (for screen grid); heater voltage, 6.3 v; plate voltage, 250 v; suppressor voltage, 0 v.



- 1) First-grid voltage, v; 2) plate current, screen current, ma;
 3) screen voltage, 150 v; 4) 100 v; 5) 150 v; 6) 100 v; 7) 50 v;
 8) 50 v.

(Above material published April 1959, PKB, G-4)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh5B

Basic function radio-frequency voltage amplification.Construction glass subminiature.General Data

Cathode — oxide-coated heater-type	
Maximum height (without leads)	43 mm
Maximum diameter	10.2 mm
Number of leads	7
Lead length	no less than 35 mm
Lead diameter	0.3 - 0.4 mm
Maximum weight	4.5 grams
Dimension drawing — 7B	

Connection Diagram for Electrodes and Leads

1 — анод
2 — сетка вторая
3 — подогреватель
4 — подогреватель



5 — сетка третья
6 — катод
7 — сетка первая

1) Plate; 2) screen; 3) heater; 4) heater; 5) suppressor; 6) cathode;
7) Control grid; A) Indicator dot.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	250 ± 25 ma
Plate voltage (=)	120 v
Screen voltage (=)	120 v
Suppressor voltage (=)	0 v
Resistance in cathode circuit for self biasing	100 ohms
Plate current	16 ± 6 ma
Transconductance	10 ± 2.5 ma/v
Transconductance for heater voltage of 5.7 v	no less than 6.3 ma/v
Input resistance at frequency of 50 Mc	about 7 kohm
Figure of merit (broad-band factor)	about 1 ma/v · μmf
Equivalent noise resistance	about 1 kohm

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh5B

First-grid back current	no more than 0.3 μ a
First-grid thermionic emission current*	no more than 0.2 μ a
Leakage current between cathode and heater**	no more than 20 ma
Vibration-noise voltage***	no more than 270 ma (eff)
Service life	500 hours
Service-life criteria:	
Transconductance	no less than 6.5 ma/v
first-grid back current	no more than 1 μ a

*At heater voltage of 7.5 v and first-grid voltage of -2 v.
 **For voltage between cathode and heater of ± 100 v.
 ***For plate-load resistance of 10 kohm at vibration frequency of 50 cps and 12 g acceleration.

Interelectrode Capacitances*

Input	6 μ f
Output	4 μ f
Transfer	no more than 0.05 μ f
Between cathode and heater	no more than 7 μ f

*Measured in shield.

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	6.9 v
Minimum heater voltage ($\sim$ or $=$)	5.7 v
Maximum plate voltage ($=$)	150 v
Maximum screen voltage ($=$)	150 v
Maximum plate power dissipation	2.4 watts
Maximum screen power dissipation	0.8 watt
Maximum voltage between cathode and heater ($=$)	150 v
Maximum cathode current	28 ma
Maximum cathode warm-up time	15 sec
Maximum resistance in first-grid circuit	1 megohm
Maximum envelope temperature	170°C

(Above material published April 1959, PKB, Sheet 1)

VIBRATION-RESISTANT SHARP-CUTOFF
RADIO-FREQUENCY PENTODE

6Zh5B-V

Basic function radio-frequency voltage amplification.

Construction glass subminiature.

General Data

Cathode — oxide-coated heater-type	
Maximum height (without leads)	43 mm
Maximum diameter	10.2 mm
Number of leads	7
Lead length	no less than 35 mm
Lead diameter	0.3 - 0.4 mm
Maximum weight	4.5 grams
Dimension drawing — 7B	

Connection Diagram for Electrodes and Leads

1 — анод

2 — сетка вторая

3 — подогреватель

4 — подогреватель



5 — сетка третья

6 — катод

7 — сетка первая

Индикаторная метка A

- 1) Plate; 2) screen; 3) heater; 4) heater; 5) suppressor; 6) cathode;
7) control grid; A) Indicator dot.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	250 ± 25 ma
Plate voltage (=)	120 v
Screen voltage (=)	120 v
Suppressor voltage (=)	0 v
Resistance in cathode circuit for self biasing	100 ohms
Plate current	15 ⁺⁵ _{-5.5} ma
Screen current	4 ⁺² ma
Transconductance	10 ± 2.5 ma/v
Transconductance for heater voltage of 5.7 v	no less than 6.3 ma/v
Input resistance at frequency of 50 Mc*	about 7 kohm

*Input resistance determined from formula:

$$R_{vkh} = \alpha \lambda^2,$$

where $\alpha = 0.27 \text{ kohm/m}^2$, λ = wavelength, in meters.

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

VIBRATION-RESISTANT SHARP-CUTOFF
RADIO-FREQUENCY PENTODE

6Zh5B-V

Figure of merit (broad-band factor)	about 1 ma/v·μmf
Equivalent noise resistance	about 1 kohm
First-grid back current	no more than 0.2 μa
First-grid thermionic emission current*	no more than 0.2 μa
Leakage current between cathode and heater**	no more than 40 μa
Vibration-noise voltage***	no more than 270 mv (eff)
Service life	500 hours
Service-life criteria:	
transconductance	no less than 6.5 ma/v
variation in transconductance from initial value	from -40 to +35%
first-grid back current	no more than 1 μa
Stable operating time	100 hours
Stability criteria:	
transconductance	no less than 6.5 ma/v
variation in transconductance from initial value	±28%
first-grid back current	no more than 1 μa

*For heater voltage of 7.5 v and first-grid voltage of -2 v and plate and screen voltages of 0 volts.
 **For voltage between cathode and heater of ± 250 v.
 ***For plate load resistance of 10 kohm with 50-cps vibration and 12-g acceleration.

Interelectrode Capacitances*

Input	6 μmf
Output	4 μmf
Transfer	no more than 0.05 μmf
Cathode-heater	no more than 7.0 μmf

*Measured within shield.

Maximum Permissible Operating Data

Maximum heater voltage (~ or =)	6.9 v
Minimum heater voltage (~ or =)	5.7 v
Maximum plate voltage (=)	150 v
Maximum plate voltage with tube cut off (for plate current not exceeding 5 μa) (=)	300 v
Maximum screen voltage (=)	150 v
Maximum screen voltage with tube cut off (for plate current not exceeding 5 μa) (=)	300 v
Maximum plate power dissipation	2.6 watts
Maximum screen power dissipation	0.8 watt
Maximum voltage between cathode and heater (=)	150 v
Maximum cathode current	28 ma

(Above material published April 1959, PKB, Sheet 1)

INCREASED-RELIABILITY SHARP-CUTOFF
RADIO-FREQUENCY PENTODE

6Zh5B-V

Maximum cathode warm-up time	15 sec
Maximum first-grid-circuit resistance	1 megohm
Maximum envelope temperature	170°C

Resistance to External Effects

Stable operating time at 100°C ambient temperature	98 hours
Maximum envelope temperature over a 100-hour period at ambient temperature not exceeding 100°C	200°C
Stable operating time at ambient temperature of 200°C	2 hours
Maximum envelope temperature over 2-hour period at ambient temperature not exceeding 200°C	250°C
Minimum ambient temperature	-70°C
Maximum cathode warm-up time at ambient temperature of -70°C	30 sec
Maximum humidity at temperature of +50°C	98%
Minimum atmospheric pressure	5 mm Hg
Extended vibration:	
at acceleration of 6 g	80 hours
at acceleration of 10 g	20 hours
Suitability criterion for extended vibration:	
transconductance	no less than 6.5 ma
Variation in plate current for constant 100-g acceleration, from initial value no more than ± 7%	
Maximum acceleration, shock (10 shocks lasting 1 msec each)	500 g
Frequency range over which there are no mechanical resonances of the tube structure	20-600 cps

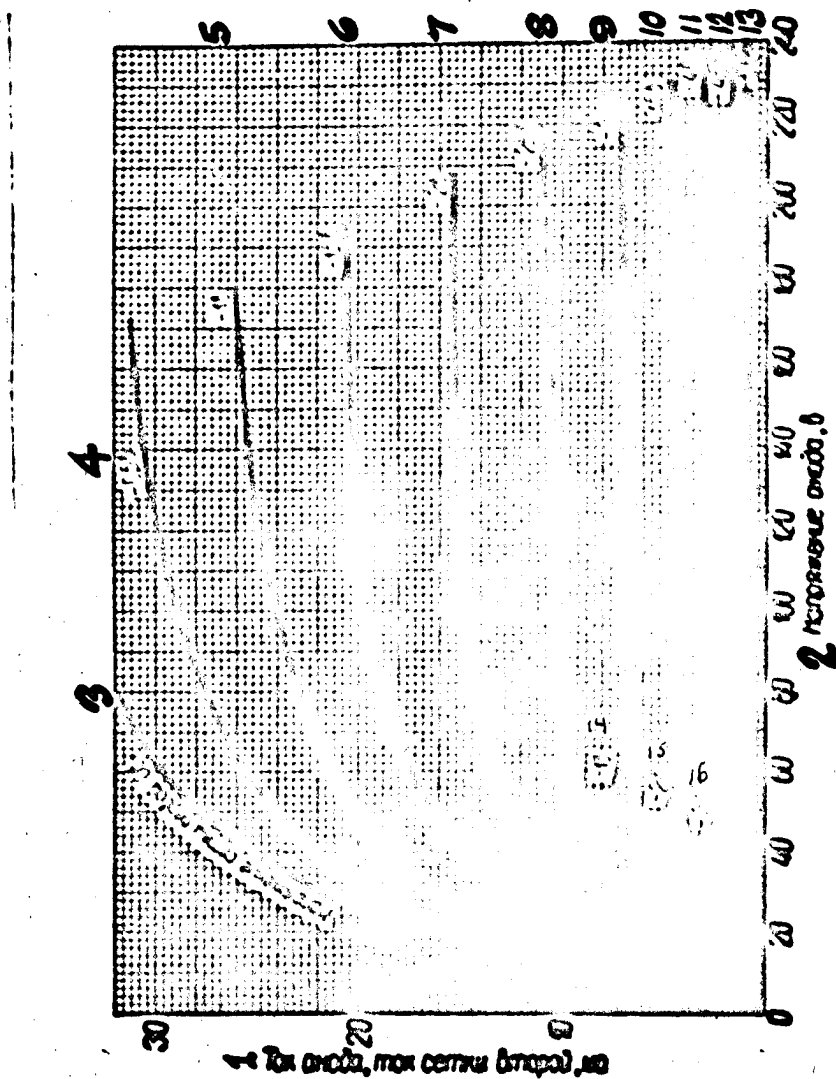
(Above material published April 1959, PKB, Sheet 2)

INCREASED-RELIABILITY SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh5B-V

Average Characteristics

———— Plate; ----- grid-plate (for screen grid); heater voltage, 6.3 v; screen voltage, 120 v.



1) Plate current, screen current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) -2 v; 8) -2.5 v; 9) -3 v; 10) -3.5 v; 11) -4 v; 12) -4.5 v; 13) -5 v; 14) -1 v; 15) -2 v; 16) -3 v.

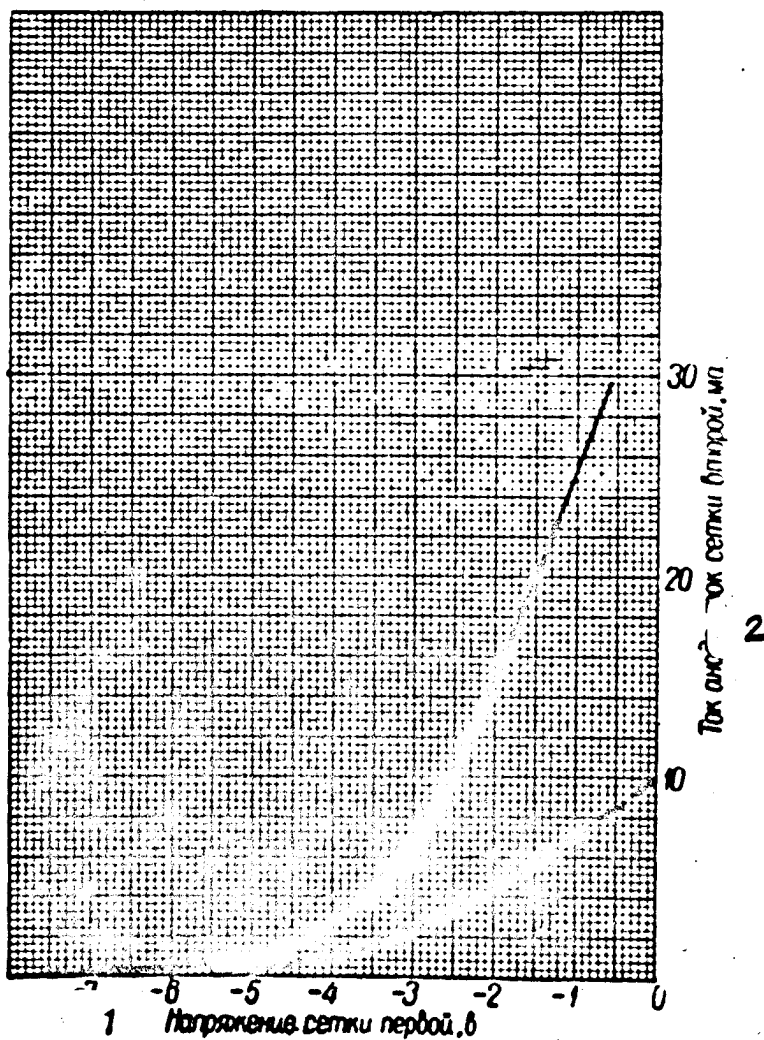
(Above material published April 1959, PKB, G-1)

INCREASED-RELIABILITY SHARP-CUTOFF
RADIO-FREQUENCY PENTODE

6Zh5B-V

Average Characteristics

———— Plate-grid; ----- grid (for screen grid); heater voltage, 6.3 v; screen voltage, 120 v; plate voltage, 120 v.



1) First-grid voltage, v; 2) plate voltage, screen voltage, ma.

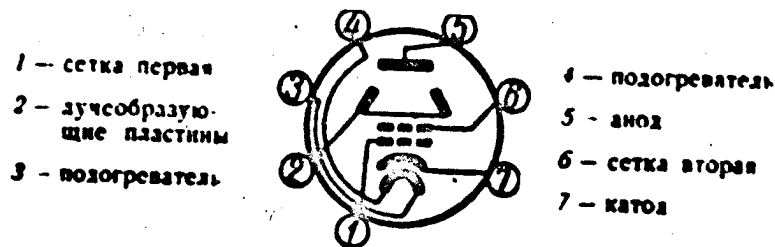
(Above material published April 1959, PKB, G-2)

PENTODE-TYPE RADIO-FREQUENCY BEAM-POWER TETRODE 6Zh5P

Basic function broad-band radio-frequency voltage amplifier.Construction glass miniature.General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Maximum weight
 Number of pins
 Dimension drawing — 3P

57 mm
 19 mm
 12 grams
 7

Connection Diagram for Electrodes and Pins

1) First grid; 2) beam-forming plate; 3) heater; 4) heater; 5) plate;
 6) screen; 7) cathode.

Electrical Data

Heater voltage ($\sim$ or $=$)	6.3 v
Heater current	450 ± 25 ma
Plate voltage ($=$)	300 v
Screen voltage ($=$)	150 v
First-grid voltage ($=$)	-2 v
Plate current	9.5 ± 4.5 ma
Plate current for first-grid voltage of -7 v	no more than 30 μ a
Screen current	no more than 3.5 ma
Transconductance	9 ± 3 ma/v
Internal resistance	no less than 240 kohm
First-grid back current	no more than 0.3 μ a
Leakage current between cathode and heater	no more than 15 μ a
Cathode emission current	no less than 40 ma
Service life	500 hours
Service-life criteria:	
transconductance	no less than 4.8 ma/v
first-grid back current	no more than 1 μ a

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

PENTODE-TYPE RADIO-FREQUENCY BEAM-POWER TETRODE 6Zh5P

	No. 1	No. 2
Heater voltage, v	6.3	6.3
Heater current, amp	0.45	0.45
Plate voltage, v	300	150
Screen voltage, v	150	150
Resistance in cathode circuit with self biasing, ohms	160	160
Plate current, ma	10	12.5
Screen current, ma	2.5	-
Transconductance, ma/v	9	11
Amplification factor	-	40
Internal resistance, kohm	500	3.6

(Above material published April 1959, PKB, Sheet 2)

PENTODE-TYPE RADIO-FREQUENCY BEAM-POWER TETRODE 6Zh5P

Interelectrode Capacitances

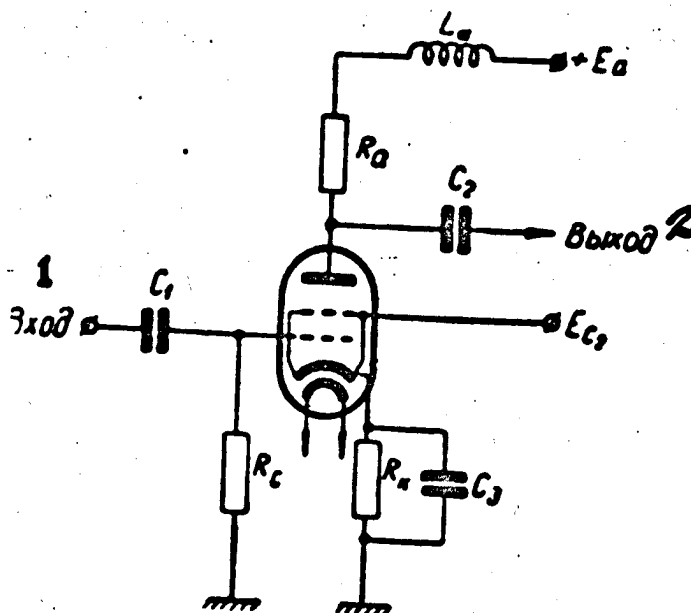
Input	$8.5 \pm 1.7 \mu\text{f}$
Output	$2.2 \pm 0.5 \mu\text{f}$
Transfer	no more than $0.03 \mu\text{f}$

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	7 v
Minimum heater voltage ($\sim$ or $=$)	5.7 v
Maximum plate voltage ($=$)	300 v
Maximum screen voltage ($=$)	150 v
Maximum plate power dissipation	3.6 watts
Maximum screen power dissipation	0.5 watt
Maximum voltage between cathode and heater ($=$)	100 v
Maximum first-grid-circuit resistance	1 megohm
Maximum envelope temperature	180°C

Standard Operating Conditions

Broad-Band Amplifier



$R_a = 1 \text{ kohm}, 1 \text{ watt}; R_c = 0.5 \text{ megohm}, 0.25 \text{ watt}; L_a = 10 \text{ mh}; C_1 = 0.05 \mu\text{f}; C_2 = 0.05 \mu\text{f}; C_3 = 0.01 \mu\text{f}; 1) \text{ input}; 2) \text{ output}.$

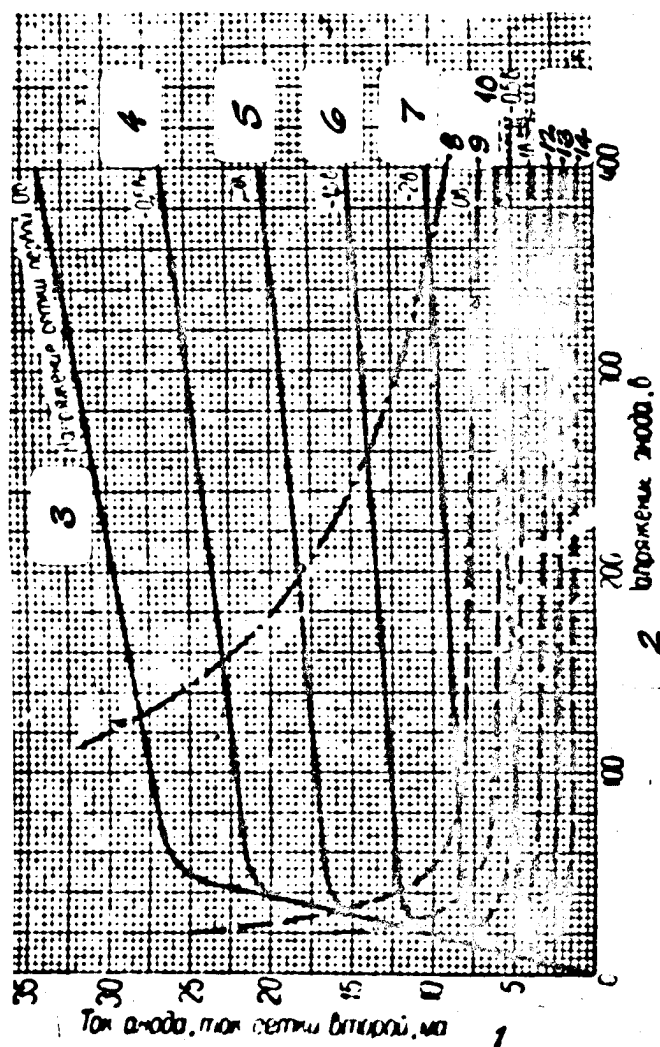
← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

PENTODE-TYPE RADIO-FREQUENCY BEAM-POWER TETRODE 6Zh5P

Average Characteristics

———— Plate; ----- grid-plate (screen grid); -.-.-.- maximum plate power dissipation; heater voltage, 6.3 v; screen voltage, 150 v.



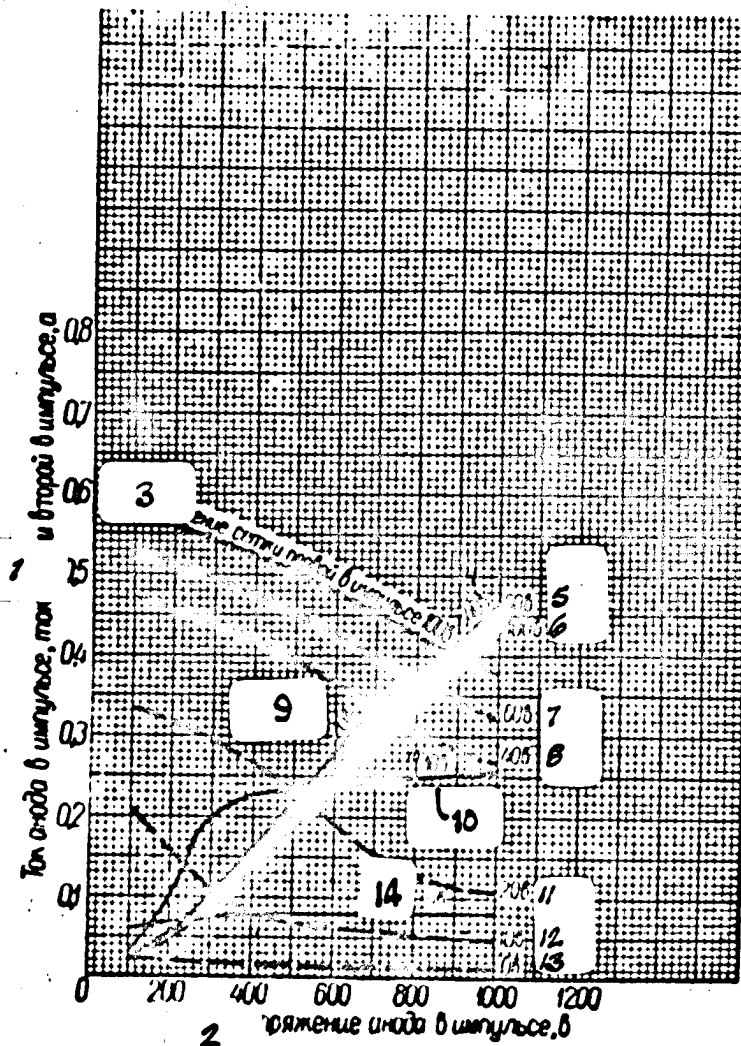
1) Plate current, screen current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) -2 v; 8) 0 v; 9) -2.5 v; 10) -0.5 v; 11) -1 v; 12) -1.5 v; 13) -2 v; 14) -2.5 v.

(Above material published April 1959, PKB, G-1)

PENTODE-TYPE RADIO-FREQUENCY BEAM-POWER TETRODE 6Zh5P

Average Pulse Characteristics

———— Plate; ----- grid-plate (for screen grid); heater voltage, 6.3 v; screen voltage, 150 v; pulse length, 2 μ sec; pulse repetition rate, 100 cps.

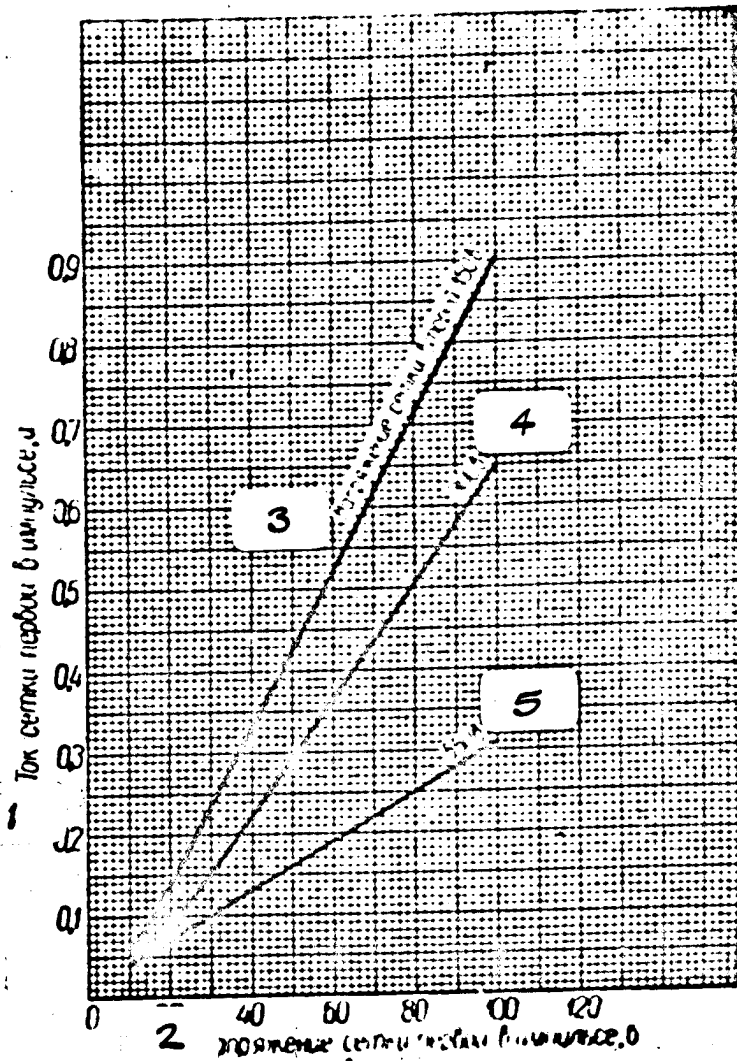


- 1) Plate current, pulsed, screen current, pulsed, amp; 2) plate voltage, pulsed, v; 3) first-grid voltage, pulsed, 100 v; 4) 40 v; 5) 60 v; 6) 100 v; 7) 60 v; 8) 40 v; 9) 20 v; 10) 10 v; 11) 20 v; 12) 10 v; 13) 0 v; 14) 0 v.
(Above material published April 1959, PKB, G-3)

PENTODE-TYPE RADIO-FREQUENCY BEAM-POWER TETRODE 6Zh5P

Average Pulse Grid Characteristics

Heater voltage, 6.3 v; plate voltage, 300 v; pulse length, 2 μ sec;
pulse repetition rate, 100 cps.



- 1) First-grid current, pulsed, amp; 2) first-grid voltage, pulsed, v;
3) second-grid voltage, 150 v; 4) 300 v; 5) 550 v.

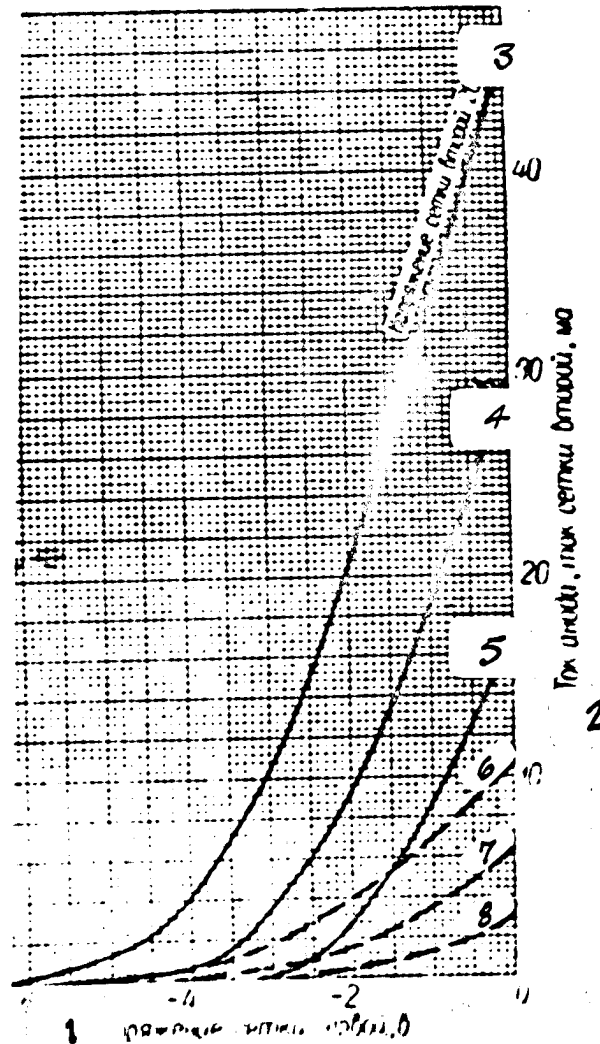
(Above material published April 1959, PKB, G-5)

PENTODE-TYPE RADIO-FREQUENCY BEAM-POWER TETRODE 6Zh5P

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Average Characteristics?

———— Plate-grid?; ----- grid (for screen grid)?; heater voltage, 6.3 v; plate voltage, 300 v.



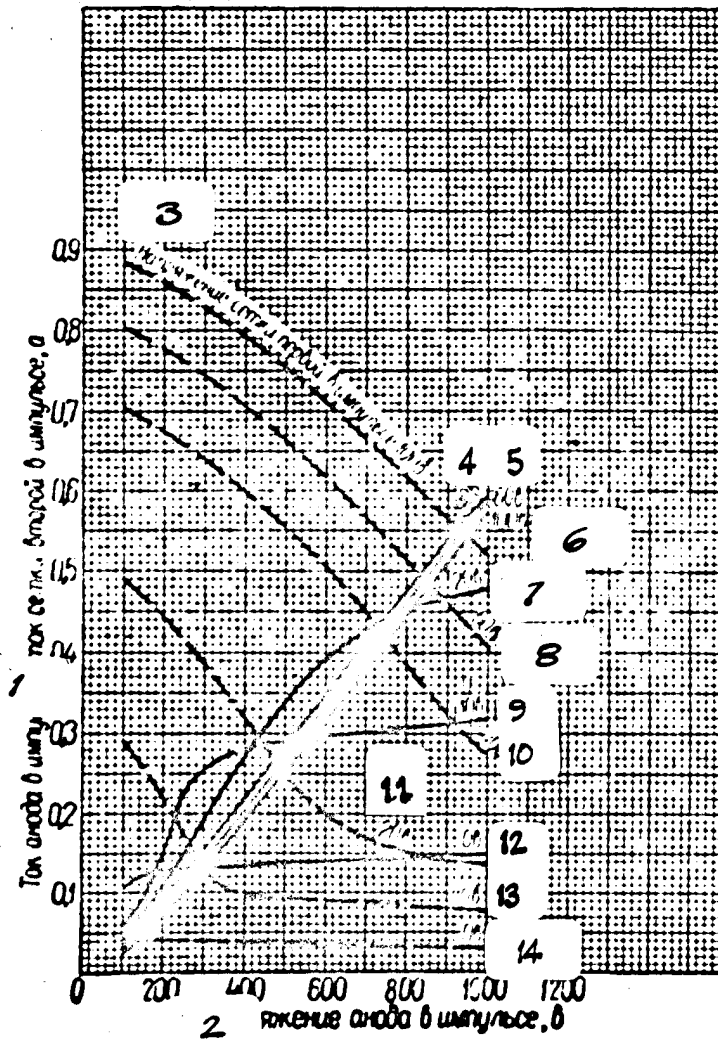
- 1) First-grid voltage, v; 2) plate current, screen current, ma;
 3) screen voltage, 200 v; 4) 150 v; 5) 100 v; 6) 200 v; 7) 150 v;
 8) 100 v.

(Above material published April 1959, PKB, G-2)

PENTODE-TYPE RADIO-FREQUENCY BEAM-POWER TETRODE 6Zh5P

Average Pulse Characteristics

———— Plate; ----- grid-plate (for screen grid); heater voltage, 6.3 v; screen voltage, 300 v; pulse length, 2 μ sec; pulse repetition rate, 100 cps.



1) Plate current, pulsed, screen current, pulsed, amp; 2) first-grid voltage, pulsed, 100 v; 3) first-grid voltage, pulsed, 100 v; 4) 40 v; 5) 60 v; 6) 100 v; 7) 20 v; 8) 60 v; 9) 10 v; 10) 40 v; 11) 20 v; 12) 0 v; 13) 10 v; 14) 0 v.

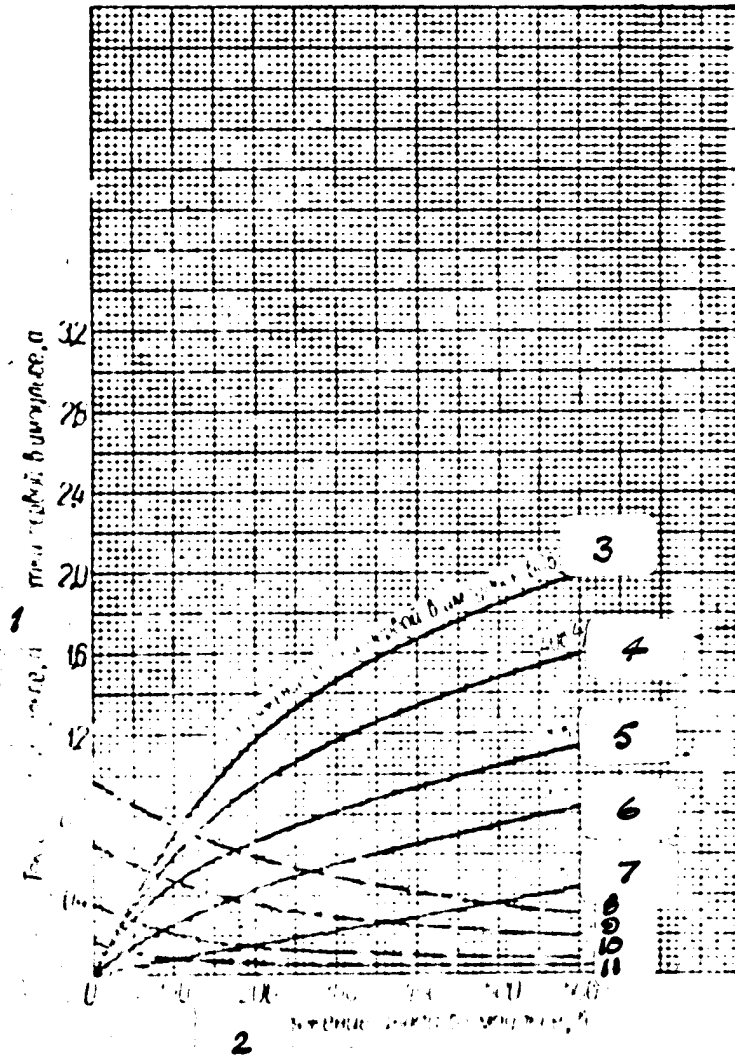
(Above material published April 1959, PKB, G-4)

PENTODE-TYPE RADIO-FREQUENCY BEAM-POWER TETRODE 6Zh5P

Average Pulse Characteristics

(triode connection)

———— Plate; -----grid-plate; heater voltage, 6.3 v; pulse length, 2 μ sec; pulse repetition rate, 100 cps.



1) Plate current, pulsed, screen current, pulsed, amp; 2) plate voltage, pulsed, v; 3) first-grid voltage, pulsed, 60 v; 4) 40 v; 5) 20 v; 6) 10 v; 7) 0 v; 8) 60 v; 9) 40 v; 10) 20 v; 11) 10 v.

(Above material published April 1959, PKB, G-6)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh7

Basic function radio-frequency voltage amplification.Construction metal.General Data

Cathode — oxide-coated heater-type

Maximum height

80 mm

Maximum diameter

33 mm

Maximum weight

44 grams

Base — octal, Tsl-1-7A

Lead-cap-VK2-2

Dimension drawing — 4M

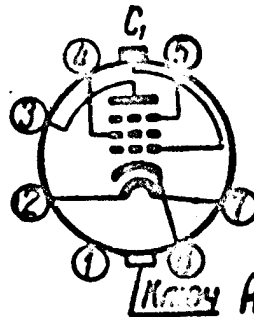
Connection Diagram for Electrodes and Leads

1 — баллон

2 — подогреватель

3 — анод

4 — сетка вторая



5 — сетка третья

7 — подогреватель

8 — катод

C₁ — верхний вывод — сетка первая

1) Envelope; 2) heater; 3) plate; 4) screen; 5) suppressor; 7) heater;
 8) cathode; C₁) top lead — control grid; A) Key.

Electrical Data

Heater voltage (~ or =)

6.3 v

Heater current

300 ± 25 ma

Plate voltage (=)

250 v

Control-grid voltage (=)

-3 v

Screen voltage (=)

100 v

Suppressor voltage (=)

0 v

Plate current

2.1 ± 0 ma [sic]

Plate current with control-grid voltage
of -8 v

no more than 30 µa

Screen current

0.6 ± 0.4 ma

Transconductance

1.225 ± 0.225 ma/v

Transconductance for heater voltage of
5.7 v

no less than 0.8 ma/v

Internal resistance

1.2 megohm

First-grid back current*

no more than 0.5 µa

*With resistance in first-grid circuit not exceeding 0.1 megohm.

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh7

Leakage current between heater and cathode	no more than 20 μ a
Cathode emission current*	no less than 45 ma
Cathode warm-up time	no more than 20 sec
First-grid insulation resistance	no less than 20 megohms
Plate insulation resistance	no less than 20 megohms
Service life	500 hours
Service-life criteria:	
transconductance	no less than 0.8 ma/v
first-grid back current**	no more than 2 μ a

*For plate voltage of 30 v.

**With resistance in first-grid circuit not exceeding 0.1 megohm.

Interelectrode Capacitances

Input	7 $\pm$ 1.4 μ mf
Output	12 $\pm$ 3.6 μ mf
Transfer	no more than 0.005 μ mf

Maximum Permissible Operating Data

Maximum heater voltage { ~ or = }	7 v	←
Minimum heater voltage { ~ or = }	5.7 v	
Maximum plate voltage (=)	330 v	
Maximum control-grid voltage (=)	140 v	
Maximum plate power dissipation	0.8 watt	
Maximum screen power dissipation	0.11 watt	
Maximum voltage between cathode and heater (=)	100 v	

← Change introduced.

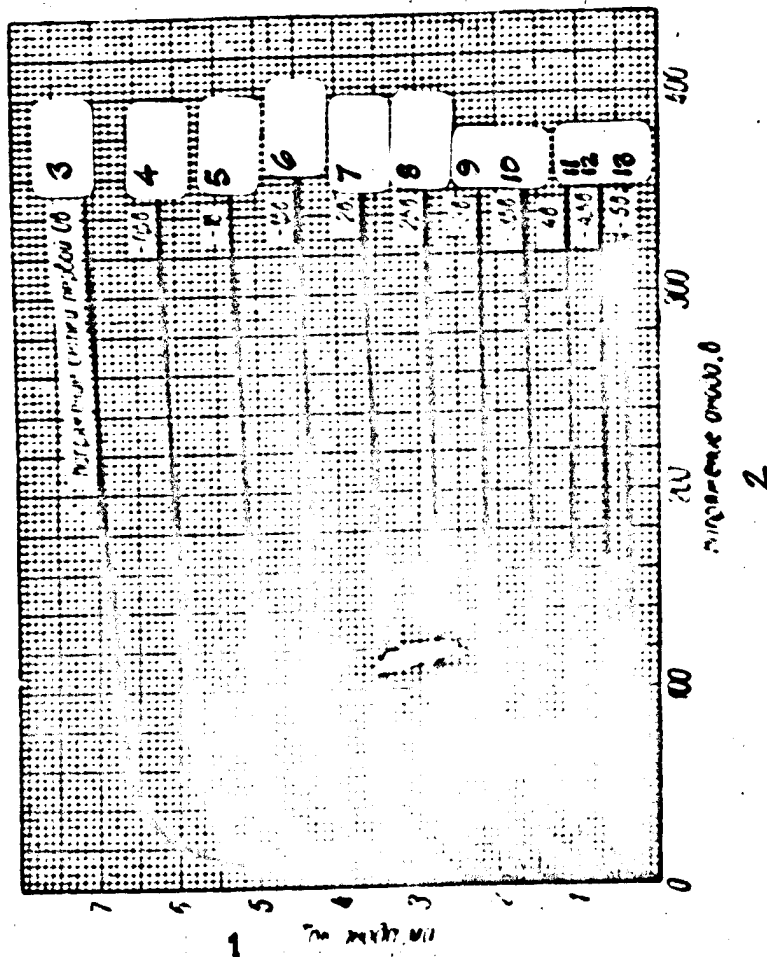
(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh7

Average Plate Characteristics

Heater voltage, 6.3 v; screen voltage, 100 v; suppressor voltage, 0 v.



1) Plate current, ma; 2) Plate voltage, v; 3) first-grid voltage, 0 v; 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) -2 v; 8) -2.5 v; 9) -3 v; 10) -3.5 v; 11) -4 v; 12) -4.5 v; 13) -5 v.

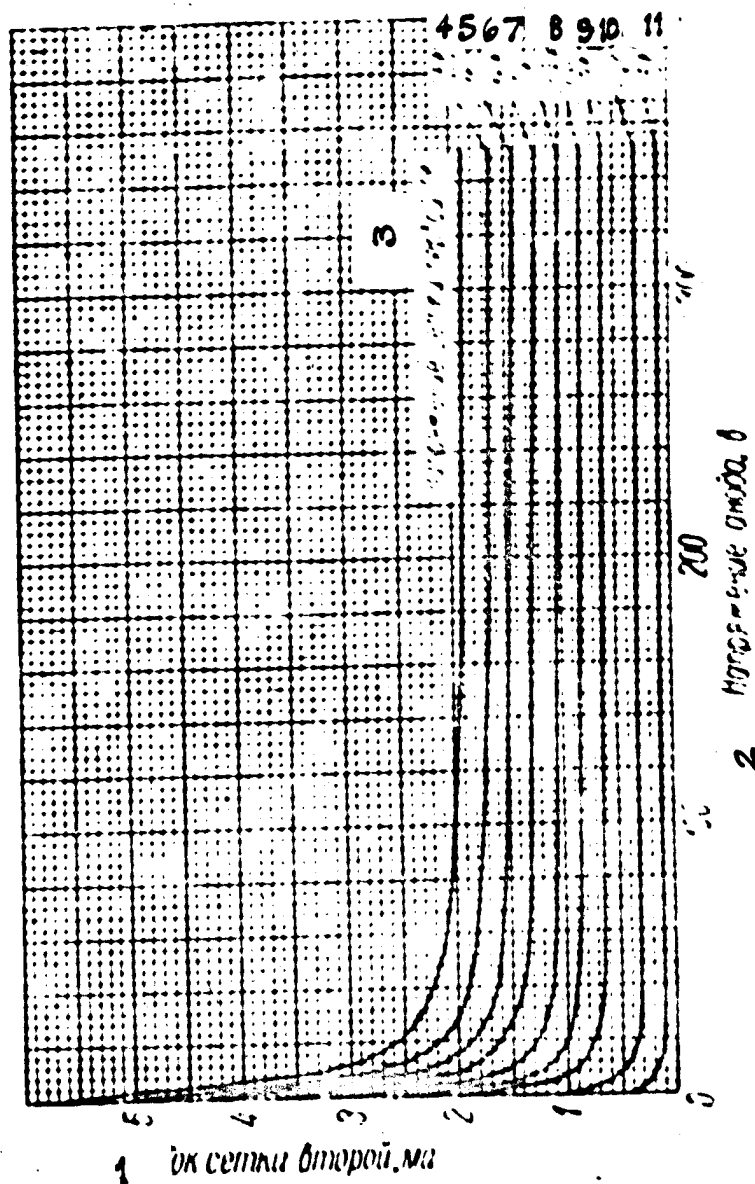
(Above material published April 1959, PKB, G-1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh7

Average Grid-plate Characteristics

Heater voltage, 6.3 v; screen voltage, 100 v; suppressor voltage, 0 v.



- 1) Screen current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v;
 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) -2 v; 8) -2.5 v; 9) -3 v; 10) -4 v;
 11) -5 v.

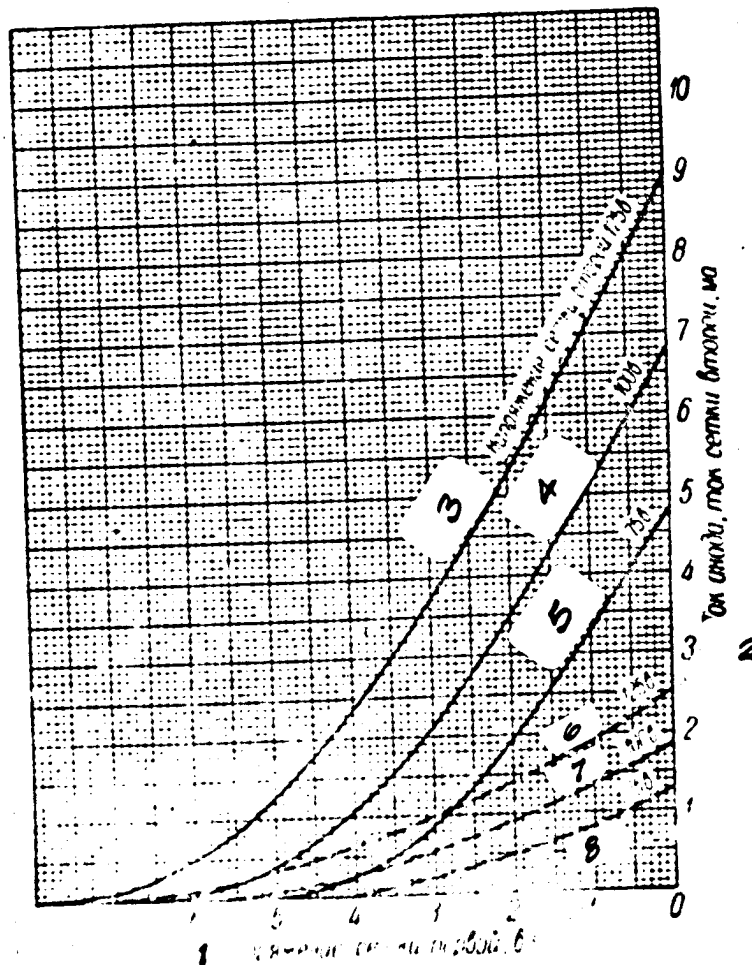
(Above material published April 1959, PKB, G-3)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh7

Average Characteristics

———— Plate-grid; ----- grid (for screen grid); heater voltage, 6.3 v; plate voltage, 250 v; suppressor voltage, 0 v.



- 1) First-grid voltage, v; 2) plate current, screen current, ma;
 3) screen voltage, 125 v; 4) 100 v; 5) 75 v; 6) 125 v; 7) 100 v;
 8) 75 v.

(Above material published April 1959, PKB, G-2)

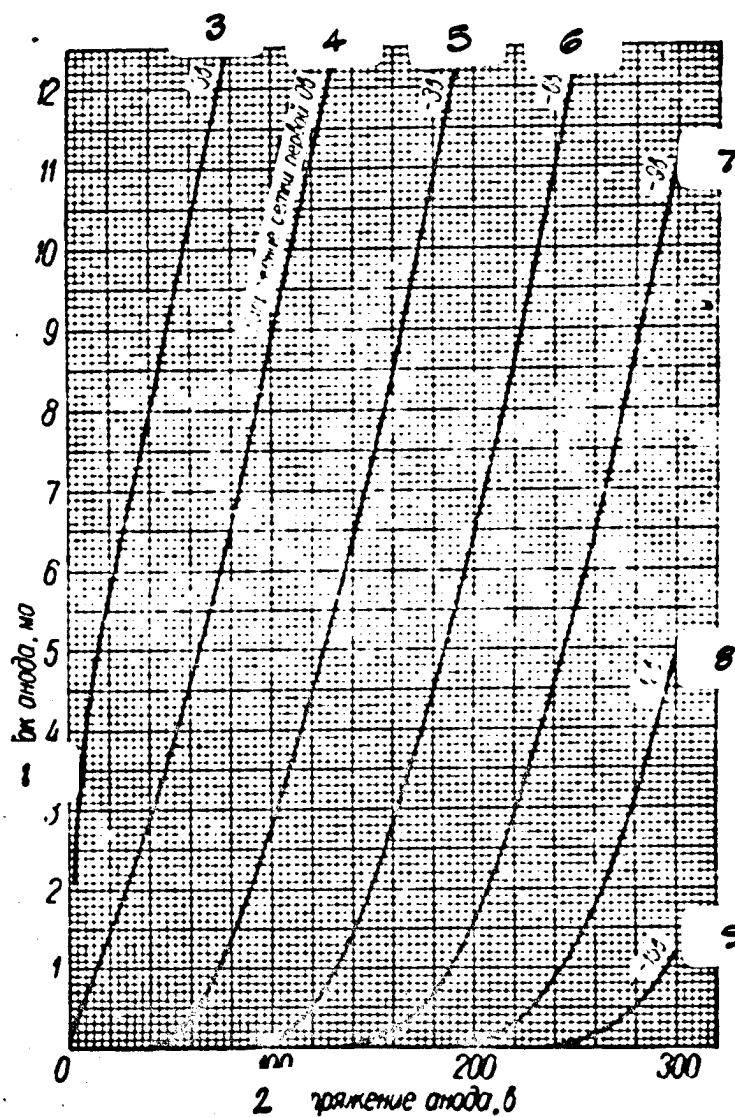
SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh7

Average Plate Characteristics

(triode connection)

Heater voltage, 6.3 v.



1) Plate current, ma; 2) plate voltage, v; 3) 3 v; 4) first-grid voltage, 0 v; 5) -3 v; 6) -6 v; 7) -9 v; 8) -12 v; 9) -15 v.

(Above material published April 1959, PKB, G-4)

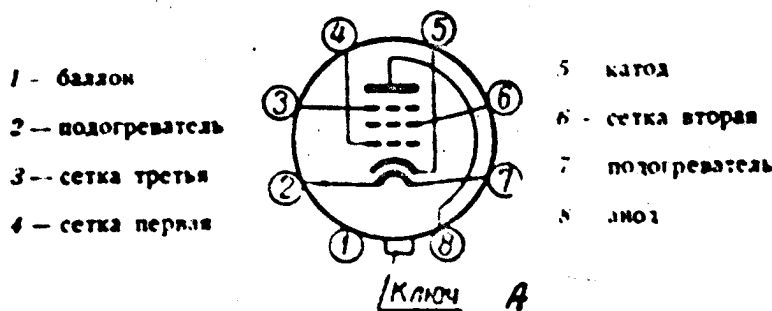
SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh8

Basic function radio-frequency voltage amplification.Construction metal.General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Maximum weight
 Base — octal, Tsl-1-8A
 Dimension drawing — 2M

67 mm
 33 mm
 42 grams

Connection Diagram for Electrodes and Pins

- 1) Envelope; 2) heater; 3) suppressor; 4) first-grid; 5) cathode;
 6) screen; 7) heater; 8) plate; A) Key.

Electrical Data

Heater voltage ($\sim$ or $=$)	6.3 v
Heater current	300 ± 25 ma
Plate voltage ($=$)	250 v
Suppressor voltage ($=$)	0 v
Screen voltage ($=$)	100 v
First-grid voltage ($=$)	-3 v
Plate current	3 ± 1 ma
Plate current for first-grid voltage of -10 v	no more than 30 μ a
Screen current	0.8 ± 0.4 ma
Transconductance	1.65 ± 0.35 ma/v
Transconductance for heater voltage of 5.7 v	no less than 0.8 ma/v
Internal resistance	about 2 megohms
First-grid back current	no more than 0.5 μ a
Leakage current between cathode and heater	no more than 20 μ a
Cathode emission current	no less than 60 ma
Cathode warm-up time	no more than 20 sec
First-grid insulation resistance	no less than 20 megohm
Plate insulation resistance	no less than 20 megohm

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh8

Наименование	А	Б	В	Г	Д	Е
Нап	А	170	170	170	300	300
Вып	Б	19	21	21	22	27
Кол	С	100	150	200	100	250
Пер	Д	0.2	0.15	0.1	0.25	0.2
Сопр	Е	100	250	500	100	250
Сопр	Ф	0.36	0.91	1.80	0.39	1.20
Емк	Г	0.07	0.07	0.25	0.07	0.07
Сопр	Н	910	1800	2700	510	1200
Емк	И	10	10	10	10	10
Пер	Ж	0.03	0.03	0.25	0.03	0.03
Сопр	К	0.43	0.91	1.30	0.43	1.30

A) Supply voltage, v; B) output voltage, v; C) amplification factor; D) alternating input-signal voltage, v (eff); E) plate load resistance (R_1), kohm; F) resistance in screen circuit (R_2), megohms; G) capacitance in screen circuit (C_1), μ f; H) resistance in cathode circuit (R_3), ohms; I) capacitance in cathode circuit (C_2), μ f; J) inter-stage coupling capacitance (C_3), μ f; K) first-grid leakage resistance to following stage (R_4), megohm.

(Above material published April 1959, PKB, Sheet 2)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh8

Service life	1000 hours
Service-life criteria:	
transconductance	no less than 1.1 ma/v
first-grid back current	no more than 2.0 μ a

Interelectrode Capacitances

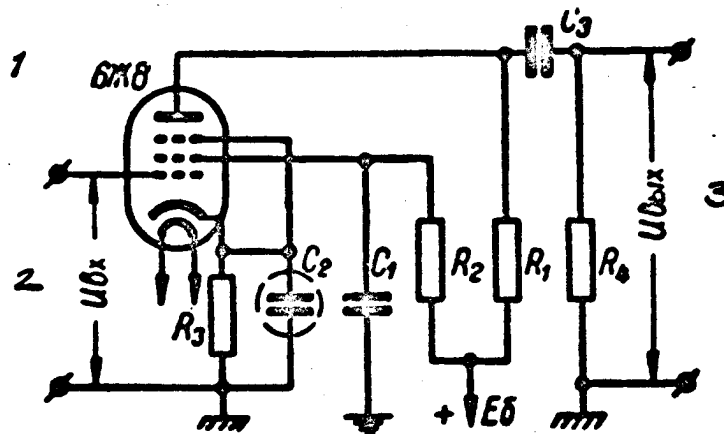
Input	$6 \pm 1.1 \mu\text{f}$
Output	$7 \pm 1.8 \mu\text{f}$
Transfer	no more than 0.005 μf

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	6.9 v
Minimum heater voltage ($\sim$ or $=$)	5.7 v
Maximum plate voltage ($=$)	330 v
Maximum screen voltage ($=$)	140 v
Maximum plate power dissipation	2.8 watts
Maximum screen power dissipation	0.7 watt
Maximum voltage between cathode and heater ($=$)	100 v

Standard Audio-Frequency Voltage-Amplification Conditions

Resistance-Coupled Stage

1) 6Zh8; 2) U_{in} ; 3) U_{out} .

← Change introduced.

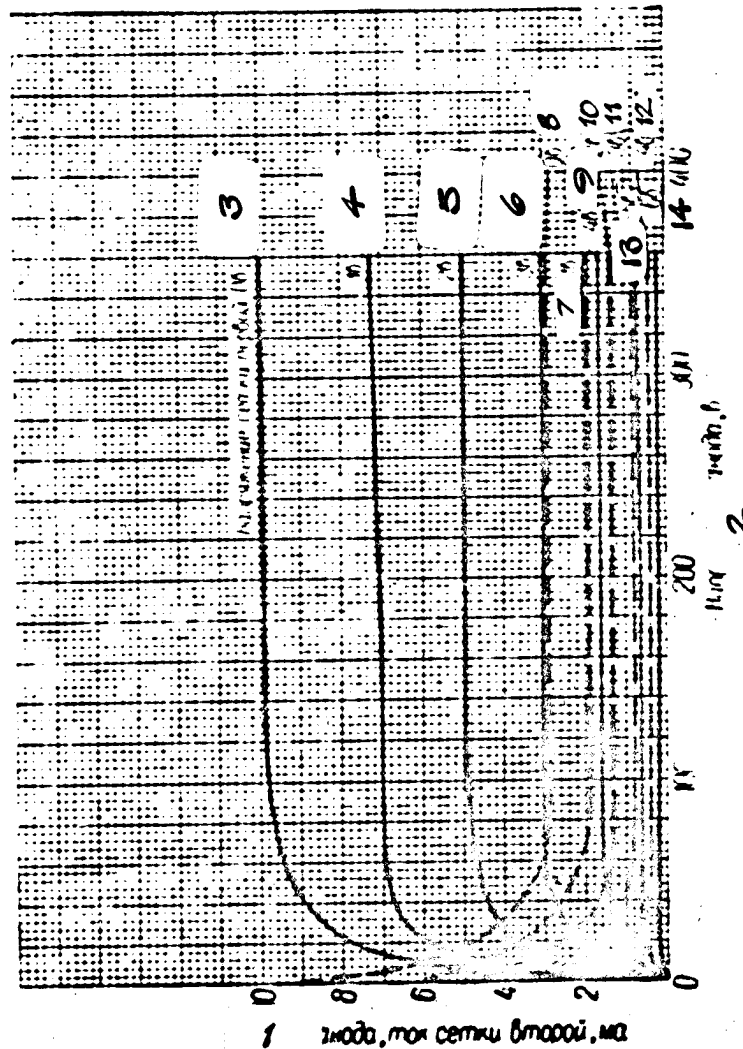
(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh8

Average Characteristics

———— Plate; ----- grid-plate (for screen grid); heater voltage, 6.3 v; screen voltage, 100 v; suppressor voltage, 0 v.



1) Plate current, screen current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -1 v; 5) -2 v; 6) -3 v; 7) -1 v; 8) 0 v; 9) -4 v; 10) -2 v; 11) -3 v; 12) -4 v; 13) -5 v; 14) -6 v.

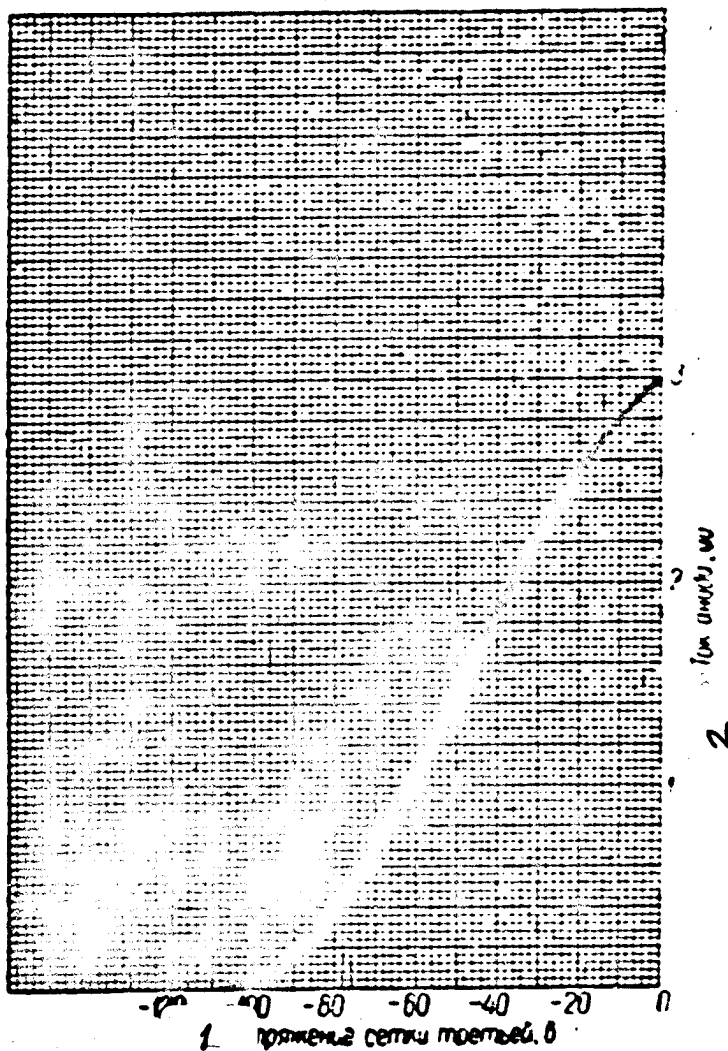
(Above material published April 1959, PKB, G-1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh8

Average Plate-Grid Characteristics

Heater voltage, 6.3 v; plate voltage, 250 v; screen voltage, 100 v; first-grid voltage, -3 v.



1) Suppressor voltage, v; 2) plate current, ma.

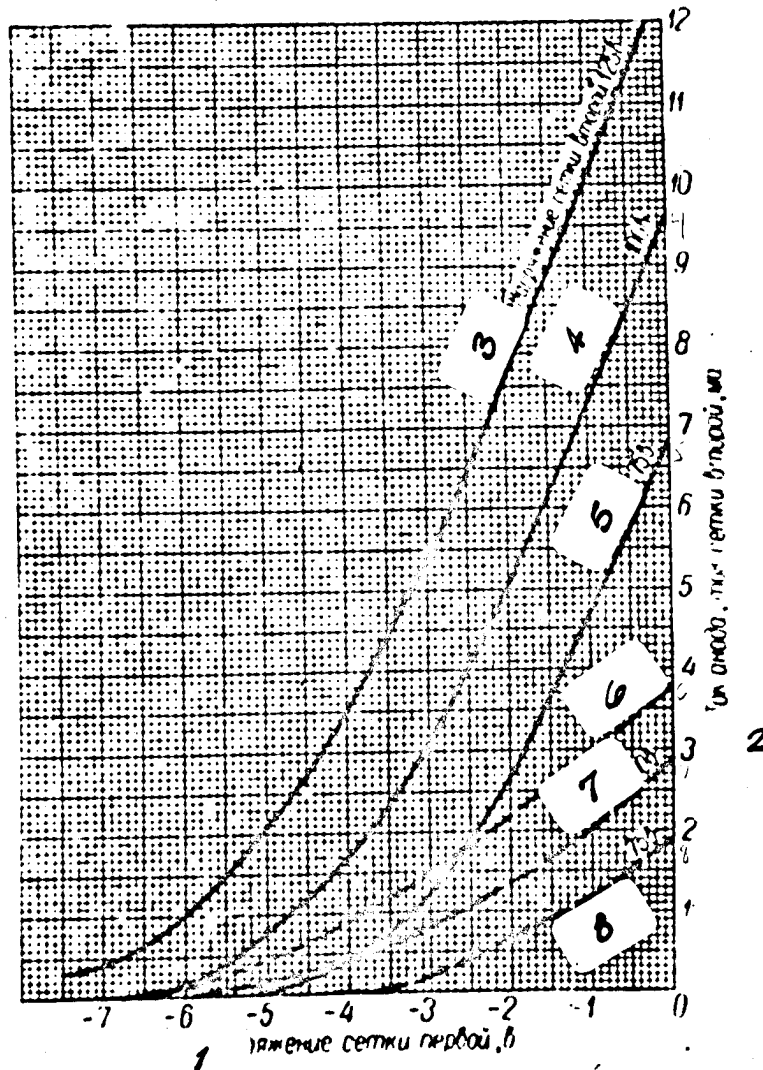
(Above material published April 1959, PKB, G-3)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh8

Average Characteristics

———— Plate-grid; ----- grid (for screen grid); heater voltage, 6.3 v; plate voltage, 250 v; suppressor voltage, 0 v.



- 1) First-grid voltage, v; 2) plate current, screen current, ma;
 3) screen voltage, 125 v; 4) 100 v; 5) 75 v; 6) 125 v; 7) 100 v;
 8) 75 v.

(Above material published April 1959, PKB, G-2)

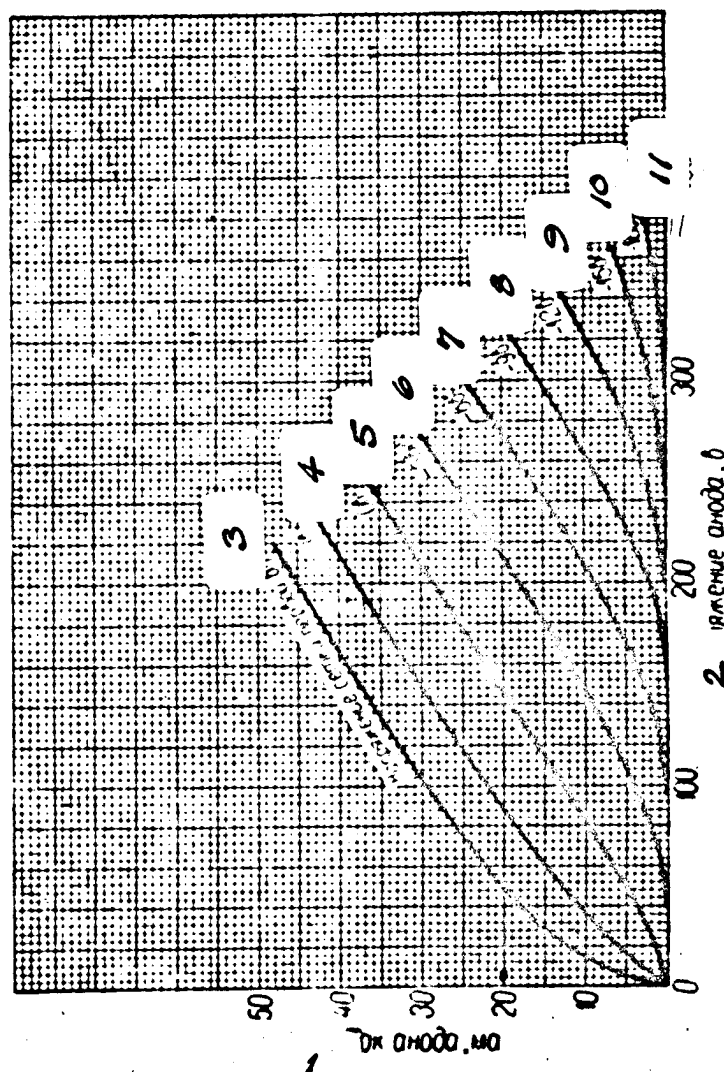
SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh8

Average Plate Characteristics

(triode connection)

Heater voltage, 6.3 v.



- 1) Plate current, ma; 2) plate voltage, v; 3) first-grid voltage, 6 v;
 4) 3 v; 5) 0 v; 6) -3 v; 7) -6 v; 8) -9 v; 9) -12 v; 10) -15 v;
 11) -18 v.

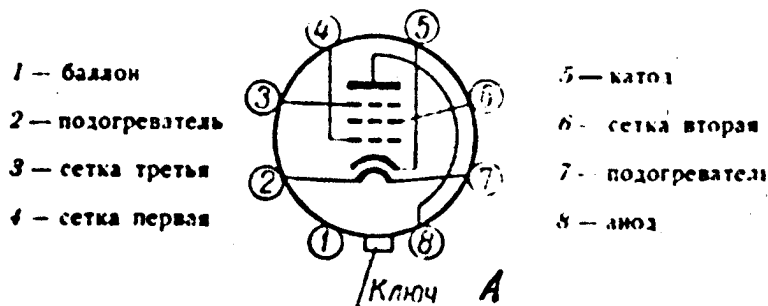
(Above material published April 1959, PKB, G-4)

LONG-LIFE SHARP-CUTOFF RADIO-FREQUENCY PENTODE 6Zh8-Ye

Basic function radio-frequency voltage amplification.Construction metal.General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Maximum weight
 Space — octal, Tsl-1-8A
 Dimension drawing — 2M

67 mm
 33 mm
 37 grams

Connection Diagram for Electrodes and Pins

1) Envelope; 2) heater; 3) suppressor; 4) first-grid; 5) cathode;
 6) screen grid; 7) heater; 8) plate; A) Key.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	300 ± 25 ma
Plate voltage (=)	250 v
Suppressor voltage (=)	0 v
Screen voltage (=)	100 v
First-grid voltage (=)	-3 v
Plate current	3 ± 0.7 ma
Plate current with first-grid voltage of -10 v	no more than 80 μ a
Screen current	0.8 ± 0.3 ma
Transconductance	1.65 ± 0.25 ma/v
Transconductance for heater voltage of 5.7 v	no less than 1.1 ma/v
First-grid back current	no more than 0.5 μ a
Leakage current between cathode and heater	no more than 20 μ a
Cathode emission current	no less than 60 ma
Cathode warm-up time	no more than 20 sec

(Above material published April 1959, PKB, Sheet 1)

LONG-LIFE SHARP-CUTOFF RADIO-FREQUENCY PENTODE 6Zh8-Ye

Vibration noise voltage*	no more than 200 mv (eff)
First-grid insulation resistance	no less than 20 megohm
Plate insulation resistance	no less than 20 megohm
Service life	5000 hours
Service-life criterion:	
transconductance	no less than 1.1 ma/v

*For plate load resistance of 10 kohm at vibration frequency of 12-50 cps and 6-g acceleration.

Interelectrode Capacitances

Input	6 ± 1.1 μμf
Output	7 ± 1.8 μμf
Transfer	no more than 0.005 μμf

Maximum Permissible Operating Data

Maximum heater voltage { ~ or = }	6.6 v
Minimum heater voltage { ~ or = }	6.0 v
Maximum plate voltage (=)	330 v
Maximum screen voltage (=)	160 v
Maximum plate power dissipation	2 watts
Maximum screen power dissipation	0.3 watt
Maximum voltage between cathode and heater (=)	200 v

Resistance to External Effects

Atmospheric pressure	41 mm Hg
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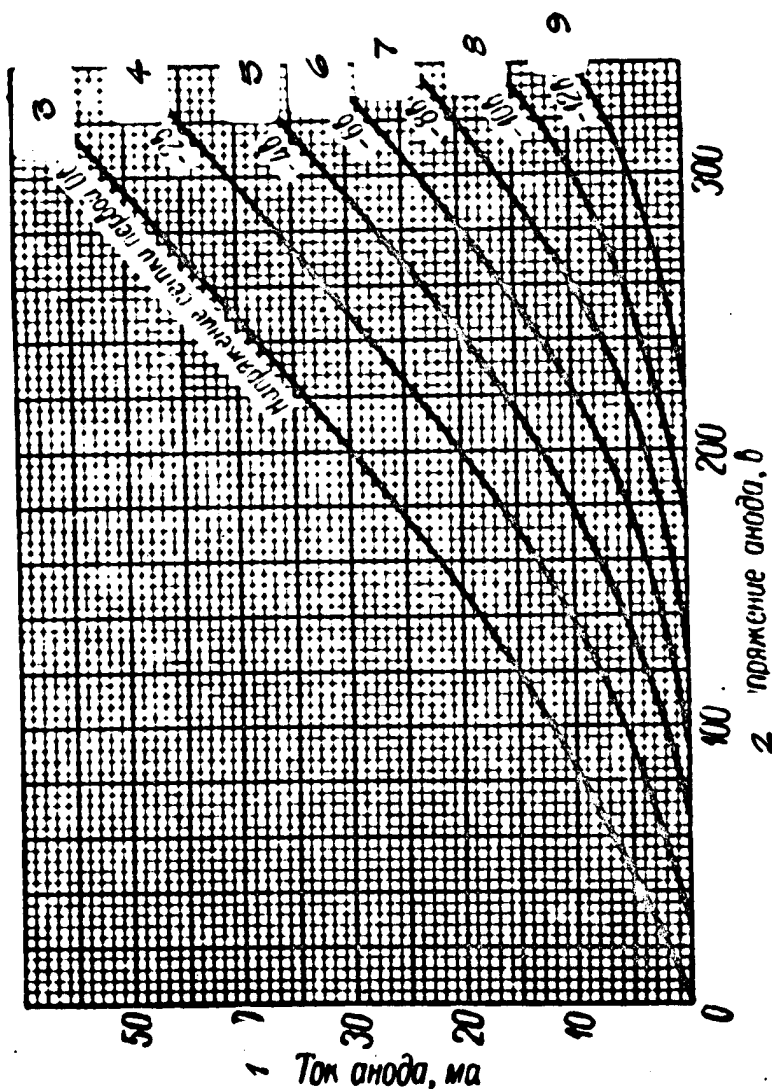
(Above material published April 1959, PKB, Sheet 1)

LONG-LIFE SHARP-CUTOFF RADIO-FREQUENCY PENTODE 6Zh8-Ye

Average Plate Characteristics

(triode connection: screen and suppressor connected to plate)

Heater voltage, 6.3 v.



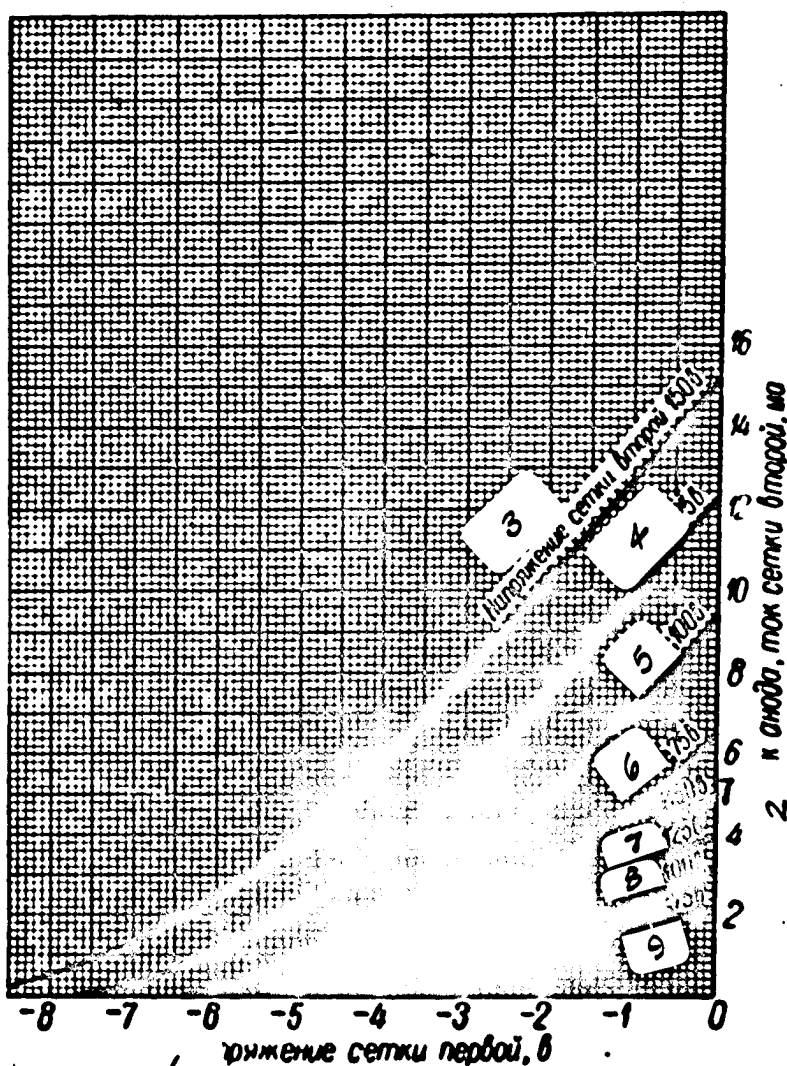
1) Plate current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -2 v; 5) -4 v; 6) -6 v; 7) -8 v; 8) -10 v; 9) -12 v.

(Above material published April 1959, PKB, G-1)

LONG-LIFE SHARP-CUTOFF RADIO-FREQUENCY PENTODE 6Zh8-Ye

Average Characteristics

———— Plate-grid; ----- grid (for screen grid); heater voltage, 6.3 v; plate voltage, 250 v; suppressor voltage, 0 v.



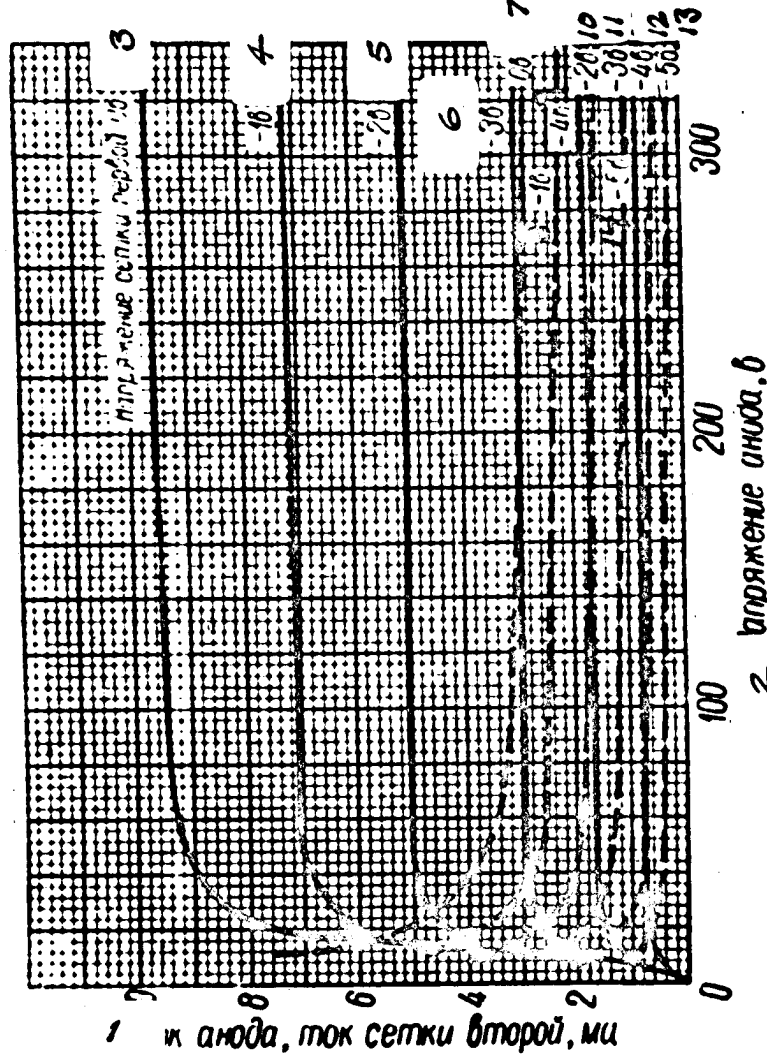
- 1) First-grid voltage, v; 2) plate current, screen current, ma;
 3) screen voltage, 150 v; 4) 125 v; 5) 100 v; 6) 75 v; 7) 150 v;
 8) 125 v; 9) 100 v; 10) 75 v.

(Above material published April 1959, PKB, G-3)

LONG-LIFE SHARP-CUTOFF RADIO-FREQUENCY PENTODE 6Zh8-Ye

Average Characteristics

———— Plate; ----- grid-plate (for screen grid); heater voltage, 6.3 v; screen voltage, 100 v.



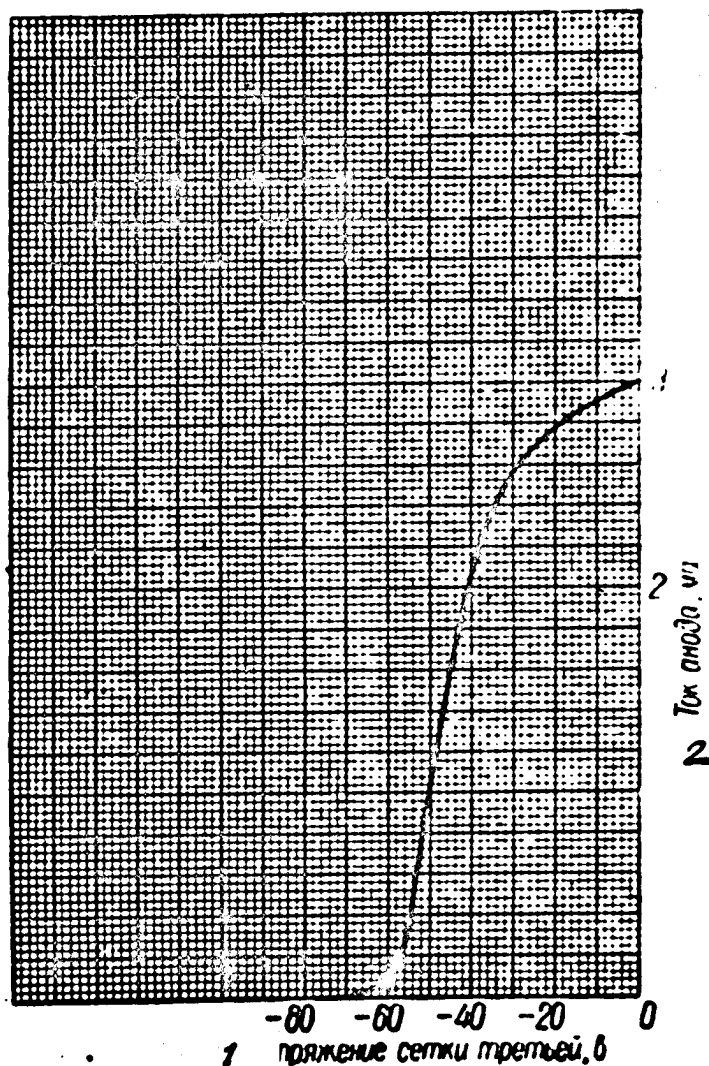
- 1) Plate current, screen current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -1 v; 5) -2 v; 6) -3 v; 7) 0 v; 8) -1 v; 9) -4 v; 10) -2 v; 11) -3 v; 12) -4 v; 13) -5 v; 14) -5 v.

(Above material published April 1959, PKB, G-2)

LONG-LIFE SHARP-CUTOFF RADIO-FREQUENCY PENTODE 6Zh8-Ye

Average Plate-Grid Curve

Heater voltage, 6.3 v; plate voltage, 250 v; screen voltage, 100 v;
first-grid voltage, -3 v.



1) Suppressor voltage, v; 2) plate voltage, ma.

(Above material published April 1959, PKB, G-4)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh9P

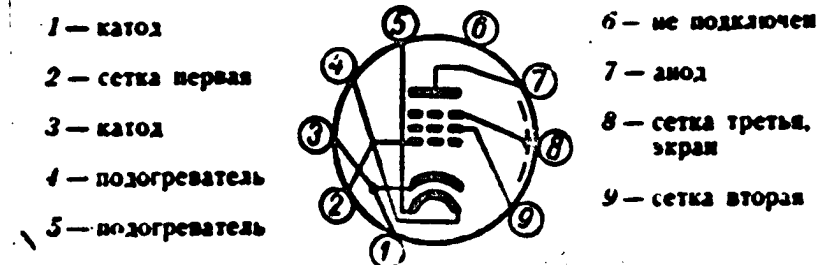
Basic function radio-frequency voltage amplification in broad-band amplifiers.

Construction glass miniature.

General Data

Cathode — oxide-coated heater-type
Maximum height
Maximum diameter
Maximum weight
Number of pins
Dimension drawing — 12P

51 mm
22.5 mm
15 grams
9

Connection Diagram for Electrodes and Pins

1) Cathode; 2) first grid; 3) cathode; 4) heater; 5) heater; 6) not connected; 7) plate; 8) suppressor, shield; 9) screen.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	300 ± 25 ma
Plate voltage (=)	150 v
Suppressor voltage (=)	0 v
Screen voltage (=)	150 v
Resistance in cathode circuit, self biasing	80 ohms
Plate current	15.5 ± 4.5 ma
Screen current	no more than 4.5 ma
Transconductance	17.5 ± 3.5 ma/v
Transconductance for heater voltage of 5.7 v	no less than 12 ma/v
Internal resistance	0.15 megohm ←
Equivalent internal noise resistance	350 ohms
Input resistance at frequency of 60 Mc	5 kohm

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh9P

Negative first-grid voltage for plate current
 of 10 μ a no more than 6.5 v
 Negative first-grid electron-current cut-
 off voltage no more than 1.1 v
 First-grid back current* no more than 0.3 μ a
 Leakage current between cathode and heater no more than 20 μ a
 Service life 500 hours
 Service-life criteria:
 variation in transconductance no more than $\pm 25\%$
 first-grid back current no more than 1 μ a

*For first-grid voltage of -2 v.

Interelectrode Capacitances

Input	8.5 $\pm$ 1 μ f
Output	3.1 $\pm$ 0.5 μ f
Transfer*	no more than 0.03 μ f
Cathode-heater	no more than 7 μ f

*Measured within shield.

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	7 v
Minimum heater voltage ($\sim$ or $=$)	5.7 v
Maximum plate voltage ($=$)	250 v
Maximum grid voltage ($=$)	160 v
Maximum negative first-grid voltage ($=$)	100 v
Maximum plate power dissipation	3 watts
Maximum screen power dissipation	0.75 watt
Maximum cathode current	35 ma
Maximum voltage between cathode and heater ($=$):	
for negative heater potential	150 v
for positive heater potential	100 v
Maximum voltage ($=$):*	
between first grid and plate	500 v
between first grid and screen	300 v
Maximum resistance in first-grid circuit	1 megohm

*With tube cut off (plate current no more than 5 μ a).

Resistance to External Effects

Maximum constant acceleration	100 g
Maximum acceleration with vibration at frequency of 50 cps	6 g

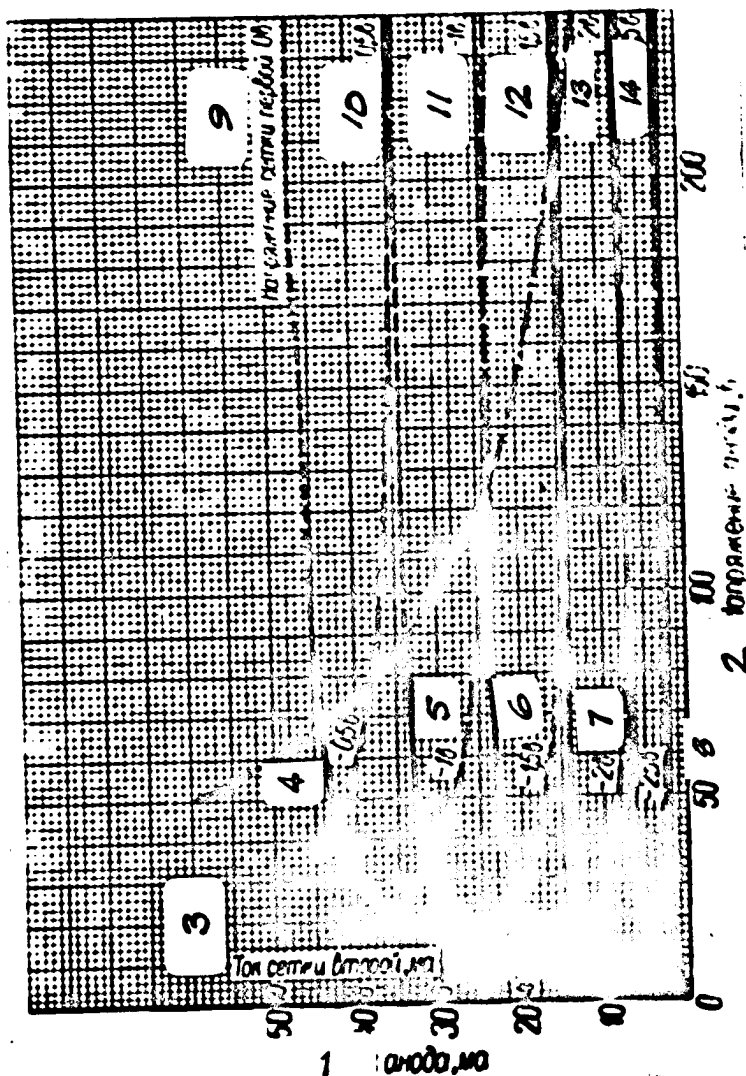
(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh9P

Average Characteristics

———— Plate; ----- grid-plate (for screen grid); -.-.-.- maximum permissible plate power dissipation; heater voltage, 6.3 v; screen voltage, 150 v; suppressor voltage, 0 v.



- 1) Plate current, ma; 2) plate voltage, v; 3) screen current, ma;
 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) -2 v; 8) -2.5 v; 9) first-grid
 voltage, 0 v; 10) -0.5 v; 11) -1 v; 12) -1.5 v; 13) -2 v; 14) -2.5 v.

(Above material published April 1959, PKB, G-1)

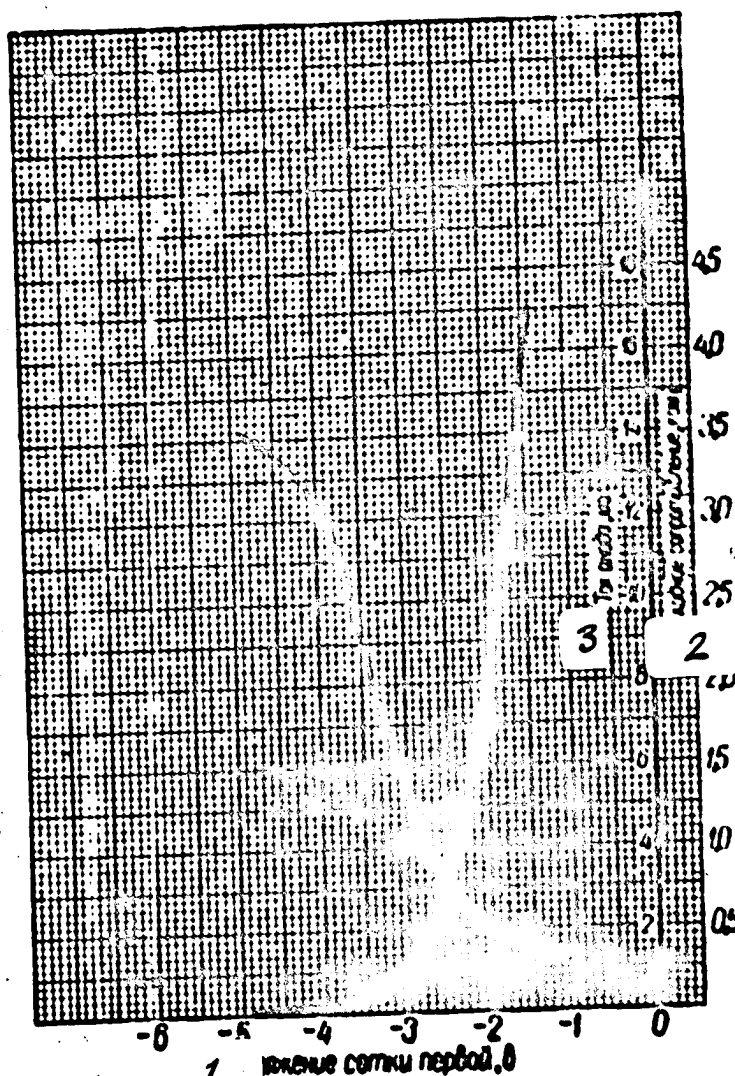
-558-

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh9P

Average Characteristics

———— Plate-grid; ----- input resistance as a function of first-grid voltage; heater voltage, 6.3 v; plate voltage, 180 v; screen voltage, 150 v; suppressor voltage, 0 v; frequency, 210 Mc.



1) First-grid voltage, v; 2) input resistance, kohm; 3) plate current, ma.

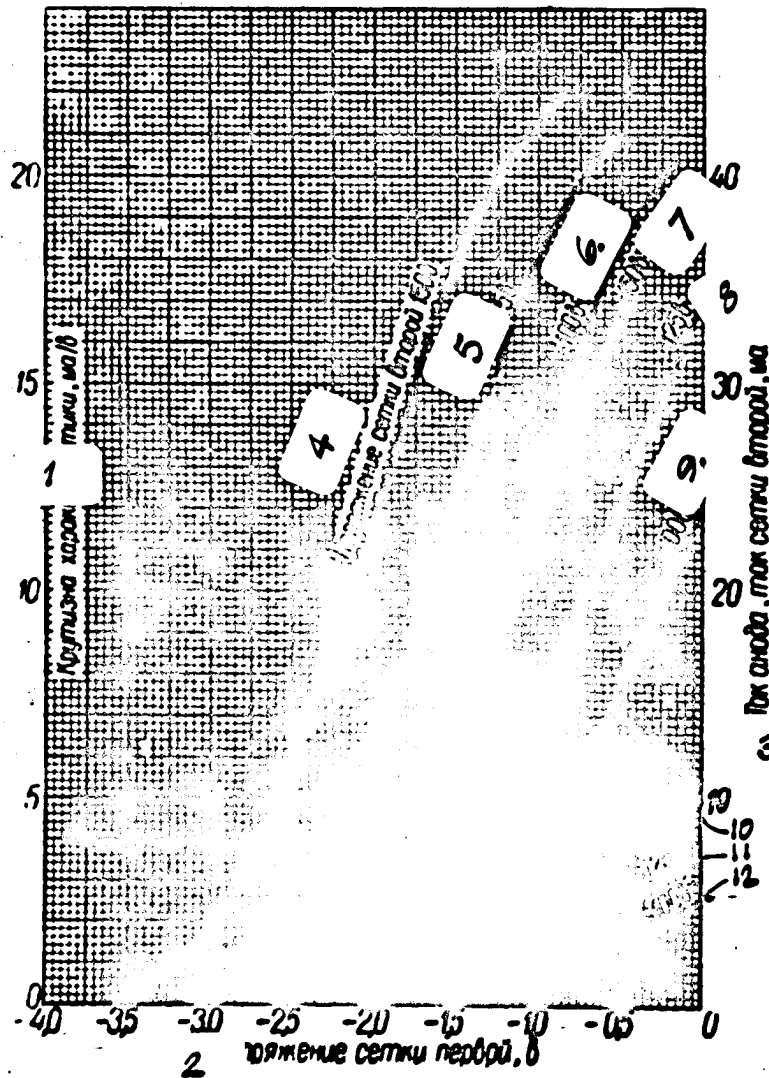
(Above material published April 1959, PKB, G-3)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh9P

Average Characteristics

———— Plate-grid; ----- grid (for screen grid); -.-.-.- transconductance; heater voltage, 6.3 v; plate voltage, 150 v; suppressor voltage, 0 v.



1) Transconductance, ma/v 2) first-grid voltage, v; 3) plate current, screen current, ma; 4) screen voltage, 150 v; 5) 125 v; 6) 100 v; 7) 150 v; 8) 125 v; 9) 100 v; 10) 150 v; 11) 125 v; 12) 100 v.

(Above material published April 1959, PKB, G-2)

LONG-LIFE SHARP-CUTOFF RADIO-FREQUENCY PENTODE 6Zh9P-Ye

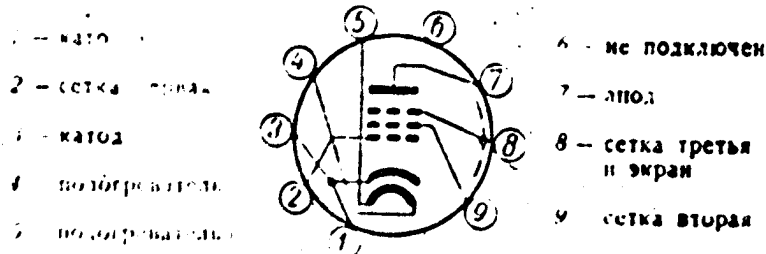
Basic function radio-frequency voltage amplification and broad-band amplifier.

Construction glass miniature.

General Data

Cathode — oxide-coated heater-type
Maximum height
Maximum diameter
Maximum weight
Number of pins
Dimension drawing — 12P

51 mm
22.5
15 grams
9

Connection Diagram for Electrodes and Pins

1) Cathode; 2) first grid; 3) cathode; 4) heater; 5) heater; 6) not connected; 7) plate; 8) suppressor and shield; 9) screen grid.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	300 ± 15 ma
Plate voltage (=)	150 v
Screen voltage (=)	150 v
Suppressor voltage (=)	0 v
Resistance in cathode circuit, self biasing	80 ohms
Plate current	15 ± 4.5 ma
Screen current	no more than 4 ma
Transconductance	18 ± 4 ma/v
Transconductance for heater voltage of 5.7 v	no less than 12 ma/v
Amplification factor for triode connection	50
Internal resistance	0.15 megohm
Input resistance at frequency of 60 Mc	5 kohm

Preliminary data.

(Above material published April 1959, PKB, Sheet 1)

LONG-LIFE SHARP-CUTOFF RADIO-FREQUENCY PENTODE 6Zh9P-Ye

Negative first-grid voltage for plate current of 10 μ a	no more than 6.5 v
Negative first-grid electron-current cut-off voltage*	no more than 1.1 v
First-grid back current**	no more than 0.2 μ a
Equivalent internal noise resistance	350 ohms
Leakage current between cathode and heater***	no more than 20 μ a
Service life	5000 hours
Service-life criteria:	
transconductance	no less than 10 ma/v
first-grid back current**	no more than 1.5 μ a

*For heater voltage of 6.3 v and 0 voltage on remaining electrodes.

**For first-grid voltage of -2 v.

***For voltage between cathode and heater of $\pm$ 150 v.Interelectrode Capacitances

Input	8.5 $\pm$ 1 μ mf
Output	3.35 $\pm$ 0.5 μ mf
Transfer*	no more than 0.03 μ mf
Cathode-heater	no more than 7 μ mf

*Measured within shield.

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or =)	6.6 v
Minimum heater voltage ($\sim$ or =)	6 v
Maximum plate voltage (=)	150 v
Maximum screen voltage (=)	150 v
Maximum plate power dissipation	3 watts
Maximum screen power dissipation	0.75 watt
Maximum voltage between cathode and heater (=):	
with heater at negative potential	150 v
with heater at positive potential	100 v
Maximum cathode current	24 ma
Maximum resistance in first-grid circuit:	
self biasing	0.5 megohm
fixed bias	0.25 megohm

Preliminary data.

(Above material published April 1959, PKB, Sheet 1)

LONG-LIFE SHARP-CUTOFF RADIO-FREQUENCY PENTODE 6Zh9P-Ye

Resistance to External Effects

Maximum constant acceleration	100 g
Maximum acceleration in the presence of vibration at 50 cps frequency	6 g
Maximum envelope temperature*	140°C

*In order to decrease envelope temperature, we recommend that a heat sink be used.

Note: Characteristics the same as for the 6Zh9P.

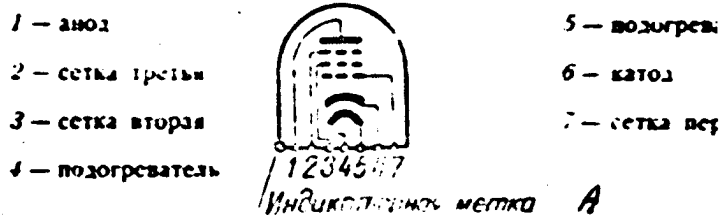
(Above material published April 1959, PKB, Sheet 2)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh10B

Basic function service in special equipment.Construction glass subminiature.General Data

Cathode — oxide-coated heater-type	
Maximum height (without leads)	43 mm
Maximum diameter	10.2 mm
Number of leads	7
Lead length	no less than 35 mm
Lead diameter	0.3 - 0.4 mm
Maximum weight	4.5 grams
Dimension drawing — 7B	

Connection Diagram for Electrodes and Pins

1) Plate; 2) suppressor; 3) screen; 4) heater; 5) heater; 6) cathode;
7) first grid; A) indicator dot.

Electrical Data

Heater voltage ($\sim$ or $=$)	6.3 v
Heater current	250 ± 25 ma
Plate voltage ($=$)	120 v
Screen voltage ($=$)	120 v
Suppressor voltage, ($=$)	0 v
Resistance in cathode circuit, self biasing	100 ohms
Plate current	$10.5^{+4}_{-3.5}$ ma
Screen current	no more than 9 ma
Transconductance	$5^{+2}_{-1.4}$ ma/v
Transconductance for heater voltage of 5.7 v	no less than 3.1 ma/v
Suppressor-grid mutual conductance for suppressor-grid voltage of -3 v	no less than 0.8 ma/v

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh10B

Suppressor-grid mutual conductance with suppressor-grid voltage of -20 v	no more than 25 ma/v
Negative suppressor voltage for plate current of 100 μ a	no more than 15 v
First-grid back current	no more than 0.4 μ a
First-grid thermionic emission current*	no more than 0.4 μ a
Leakage current between cathode and heater**	no more than 20 μ a
Vibration noise voltage***	no more than 270 mv (eff)
Service life	500 hours
Service-life criteria:	
transconductance	no less than 3.1 ma/v
first-grid back current	no more than 1 μ a

*For heater voltage of 7.5 v and first-grid voltage of -2 v.

**With voltage between cathode and heater of 100 v.

***For plate load resistance of 10 kohm at vibration frequency of 500 cps and acceleration of 12 g.

Interelectrode Capacitances*

Input	6.5 μ mf
Output	4.5 μ mf
Transfer	no more than 0.05 μ mf
Between cathode and heater	no more than 7 μ mf

*Measured within shield.

Maximum Permissible Operating Data

Maximum heater voltage { ~ or = }	6.9 v
Minimum heater voltage { ~ or = }	5.7 v
Maximum plate voltage (=)	150 v
Maximum plate voltage with tube cut off (for plate current of 5 μ a)(=)	250 v
Maximum screen voltage with tube cut off (for plate current of 5 μ a)(=)	250 v
Maximum plate power dissipation	2.1 watts
Maximum screen power dissipation	1.3 watts
Maximum cathode current	28 ma
Maximum cathode warm-up time	15 sec
Maximum voltage between cathode and heater (=)	150 v
Maximum resistance in first-grid circuit	1 megohm
Maximum envelope temperature	170°C

(Above material published April 1959, PKB, Sheet 1)

INCREASED-RELIABILITY SHARP-CUTOFF

6Zh10B-V

RADIO-FREQUENCY PENTODE

Basic function service in special radio equipment.Construction glass subminiature.General Data

Cathode — oxide-coated heater-type	
Maximum height (without leads)	43 mm
Maximum diameter	10.2 mm
Number of pins	7
Lead length	no less than 35 mm
Lead diameter	about 0.3-0.4 mm
Maximum weight	4.5 grams
Dimension drawing — 7B	

Connection Diagram for Electrodes and Leads

1 — анод

2 — сетка третья

3 — сетка вторая

4 — подогреватель



5 — подогреватель

6 — катод

7 — сетка первая

Индикаторная метка

A

- 1) Plate; 2) suppressor; 3) screen; 4) heater; 5) heater; 6) cathode;
 7) first grid; A) indicator dot.

Electrical Data

Heater voltage ($\sim$ or $=$)	6.3 v
Plate voltage ($=$)	120 v
Screen voltage ($=$)	120 v
Suppressor voltage ($=$)	0 v
Resistance in cathode circuit, automatic biasing	100 ohms
Heater current	250 ± 25 ma
Plate current	10.5 ± 3.5 ma
Screen current	6 ± 3 ma
Transconductance	5 ± 2 ma/v
Transconductance for heater voltage of 5.7 v	no less than 3.1 ma/v
Suppressor-grid mutual conductance for suppressor voltage of -3 v	$1.5_{-0.7}$ ma/v

(Above material published April 1959, PKB, Sheet 1)

INCREASED-RELIABILITY SHARP-CUTOFF
RADIO-FREQUENCY PENTODE

6Zh10B-V

Maximum screen power dissipation	1.3 watts
Maximum voltage between cathode and heater (=)	150 v
Maximum cathode warm-up time	15 sec
Maximum resistance in first-grid circuit	1 megohm
Maximum envelope temperature	170°C

Resistance to External Effects

Stable operating time at ambient temperature of 200°C	2 hours
Maximum envelope temperature over 2-hour period at ambient temperature of not more than 200°C	250°C
Stable operating time at ambient temperature of 100°C	98 hours
Maximum envelope temperature over 100-hour period at ambient temperature not exceeding 100°C	200°C
Minimum ambient temperature	-70°C
Maximum cathode warm-up time at ambient temperature of -70°C	30 sec
Minimum atmospheric pressure	5 mm Hg
Maximum humidity at temperature of 50°C	98%
Plate current variation with constant acceleration of 10 g	no more than ±7%
Extended vibration:	
6-g acceleration	80 hours
10-g acceleration	20 hours
Criterion of suitability for extended vibration: transconductance	no less than 3.1 ma/v
Maximum shock acceleration (10 shocks lasting 1 msec each)	500 g

(Above material published April 1959, PKB, Sheet 2)

INCREASED-RELIABILITY SHARP-CUTOFF
RADIO-FREQUENCY PENTODE

6Zh10B-V

Suppressor-grid mutual conductance for suppressor voltage of -20 v	no more than 25 μ a/v
Negative suppressor voltage for plate current of 100 μ a	no more than 15 v
First-grid back current	no more than 0.4 μ a
First-grid thermionic emission current*	no more than 0.4 μ a
Leakage current between cathode and heater**	no more than 40 μ a
Vibration noise voltage***	no more than 270 mv (eff)
Service life	500 hours
Service-life criteria:	
transconductance	no less than 3.1 ma/v
variation in transconductance from initial value	no more than +30% -40%
first-grid back current	no more than 1 μ a
Stable operating time	100 hours
Stability criteria:	
transconductance	no less than 3.1 ma/v
variation in transconductance from initial value	+28%
first-grid back current	no more than 1 μ a

*For heater voltage of 7.5 v and first-grid voltage of -2 v.
 **For voltage between heater and cathode of $\pm$ 230 v.
 ***For plate load resistance of 10 kohm at vibration frequency of 50-cps and 12 g acceleration.

Interelectrode Capacitances*

Input	6.5 μ mf
Output	4.5 μ mf
Transfer	no more than 0.05 μ mf
Cathode-heater	no more than 7 μ mf

*Measured inside shield.

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	6.9 v
Minimum heater voltage ($\sim$ or $=$)	5.7 v
Maximum plate voltage ($=$)	150 v
Maximum plate voltage with tube cut off (for plate current of 5 μ a)	300 v
Maximum first-grid voltage ($=$)	150 v
Maximum screen voltage with tube cut off (for plate current of 5 μ a) ($=$)	300 v
Maximum plate power dissipation	2.1 watts

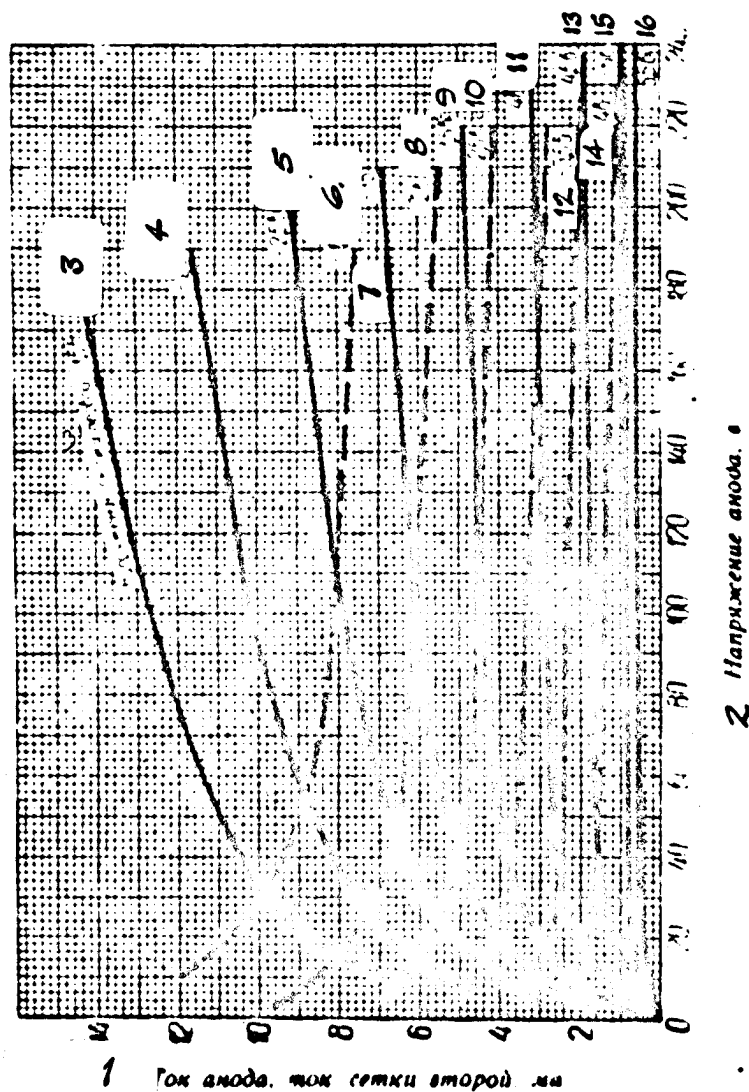
(Above material published April 1959, PKB, Sheet 1)

INCREASED-RELIABILITY SHARP-CUTOFF
RADIO-FREQUENCY PENTODE

6Zh10B-V

Average Characteristics

———— Plate; ----- grid-plate (for screen grid); screen voltage, 120 v.



1) Plate current, screen current, ma; 2) plate voltage, v; 3) first-grid voltage, -1.5 v; 4) -2 v; 5) -2.5 v; 6) -1.5 v; 7) -3 v; 8) -2 v; 9) -3.5 v; 10) -2.5 v; 11) -4 v; 12) -3.5 v; 13) -4.5 v; 14) -4 v; 15) -5 v; 16) -5.5 v.

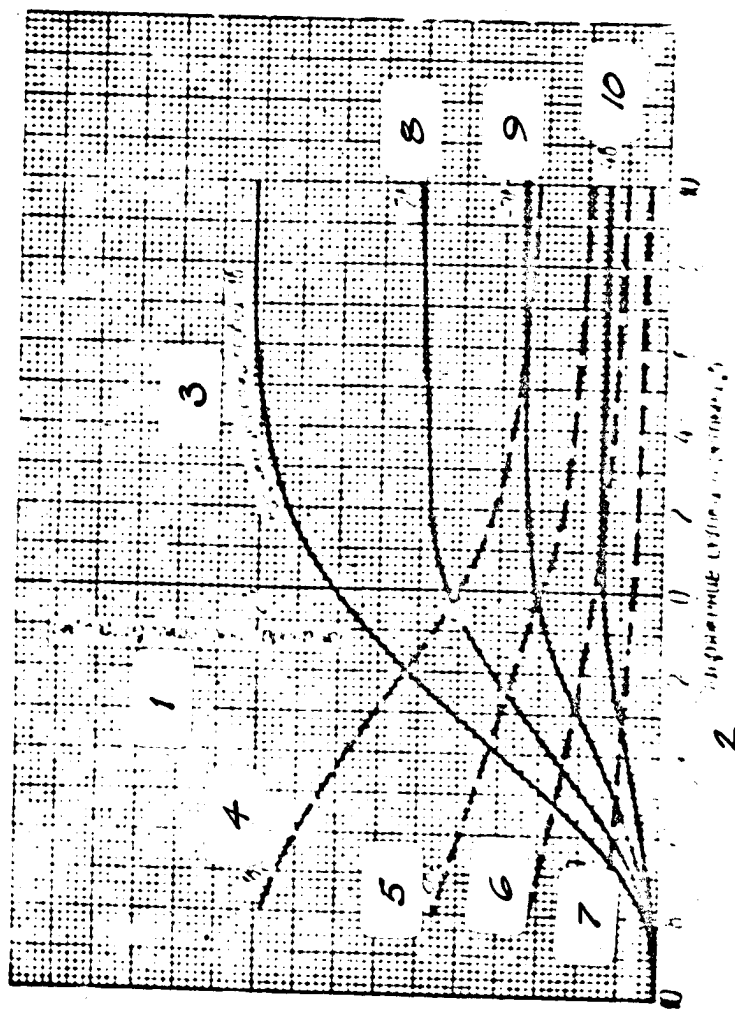
(Above material published April 1959, PKB, G-1)

INCREASED-RELIABILITY SHARP-CUTOFF
RADIO-FREQUENCY PENTODE

6Zh10B-V

Average Characteristics

— Plate-grid; ----- grid (for screen grid); heater voltage, 6.3 v; plate voltage, 120 v, screen voltage, 120 v.



- 1) Plate current, screen current, ma; 2) suppressor voltage, v;
3) first-grid voltage, -1 v; 4) -1 v; 5) -2 v; 6) -3 v; 7) -4 v;
8) -2 v; 9) -3 v; 10) -4 v.

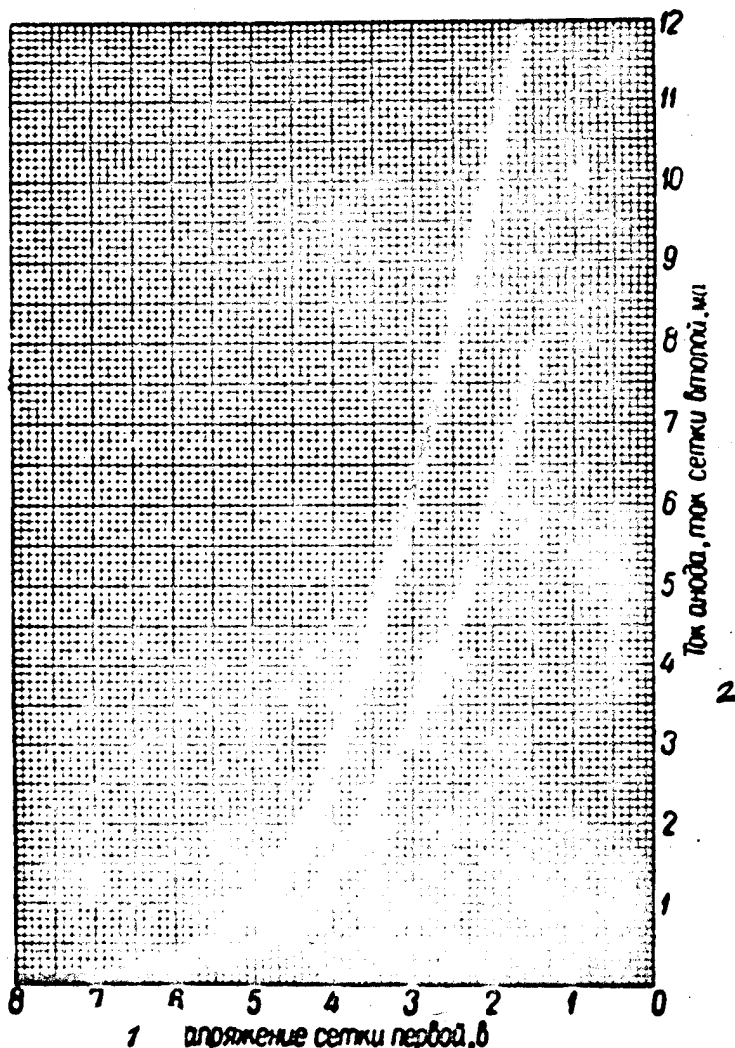
(Above material published April 1959, PKB, G-3)

INCREASED-RELIABILITY SHARP-CUTOFF
RADIO-FREQUENCY PENTODE.

6Zh10B-V

Average Characteristics

———— Plate-grid; ----- grid (for screen grid); heater voltage, 6.3 v; plate voltage, 120 v; screen voltage, 120 v.



1) First-grid voltage, v; 2) plate current, screen current, ma.

(Above material published April 1959, PKB, G-2)

DUAL-GRID CONTROL SHARP-CUTOFF
RADIO-FREQUENCY PENTODE,

6Zh10P

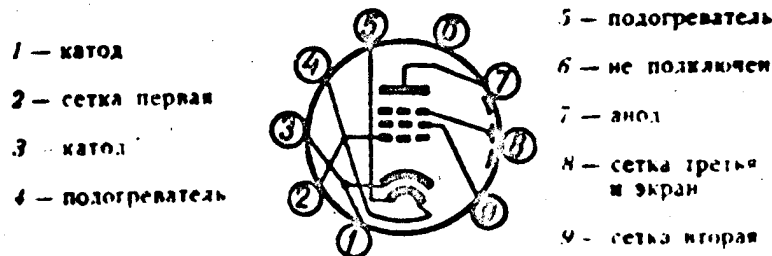
Basic function radio-frequency voltage amplification.

Construction glass miniature.

General Data

Cathode — oxide-coated heater-type	
Maximum height	51 mm
Maximum diameter	22.5 mm
Maximum weight	15 grams
Number of pins	9
Dimension drawing — 12P	

Connection Diagram for Electrodes and Pins



1) Cathode; 2) first grid; 3) cathode; 4) heater; 5) heater; 6) not connected; 7) plate; 8) suppressor and shield; 9) screen grid.

Electrical Data

Heater voltage (~ or =)	6.3 v	
Heater current	300 ± 25 ma	
Plate voltage (=)	200 v	
Suppressor voltage (=)	0 v	
Screen voltage (=)	100 v	
Resistance in cathode circuit, self biasing	80 ohms	
Plate current	6.5 ± 1.5 ma	←
Plate current with suppressor voltage of -12 v	no more than 50 µa	
Screen current	no more than 5.5 ma	
First-grid mutual conductance	6.5 ^{+2.5} / _{-1.5} ma/v	←
First-grid mutual conductance for heater voltage of 5.7 v	no less than 5.6 ma/v	
Suppressor-grid mutual conductance*	no less than 1.5 ma/v	
Internal resistance	0.1 megohm	
Negative first-grid voltage for plate current of 10 µa**	no more than 5 v	

*For plate voltage of 75 v, screen voltage of 85 v, suppressor voltage of -1 v, first-grid voltage of 0 v, and resistance in screen circuit of 3 kohm.

**For plate voltage of 200 v, screen voltage of 100 v, and suppressor voltage of 0 v.

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

DUAL-GRID CONTROL SHARP-CUTOFF
RADIO-FREQUENCY PENTODE

6Zh10P

Negative first-grid electron-current cut-off voltage	no more than 1.1 v
Negative first-grid back current*	no more than 0.3 μ a
Leakage current between cathode and heater**	no more than 20 μ a
Service life-	500 hours
Service-life criteria:	
variation in first-grid mutual conductance	no more than $\pm 20\%$
first-grid back current	no more than 1 μ a

*For first-grid voltage of -1.5 v.

**For voltage between cathode and heater of ± 150 v.

Interelectrode Capacitances

Input	8.5 $\pm$ 10 μ f	←
Output	3.9 $\pm$ 0.5 μ f	
Transfer*	no more than 0.025 μ f	
Cathode-heater	no more than 7 μ f	

*Measured within shield.

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	7 v
Minimum heater voltage ($\sim$ or $=$)	5.7 v
Maximum plate voltage ($=$)	250 v
Maximum screen voltage ($=$)	120 v
Maximum negative first-grid voltage ($=$)	100 v
Maximum plate power dissipation	3 watts
Maximum screen power dissipation	0.75 watt
Maximum cathode current	35 ma
Maximum voltage between cathode and heater ($=$):	
with heater at positive potential	100 v
with heater at negative potential	150 v
Maximum voltage* ($=$):	
between first grid and plate	500 v
between first grid and screen	300 v
Maximum resistance in first-grid circuit	1 megohm

*With tube cut off (Plate current no more than 5 μ a).

Resistance to External Effects

Maximum centrifugal acceleration	100 g
Maximum acceleration with vibration at frequency of 50 cps	6 g

← Change introduced.

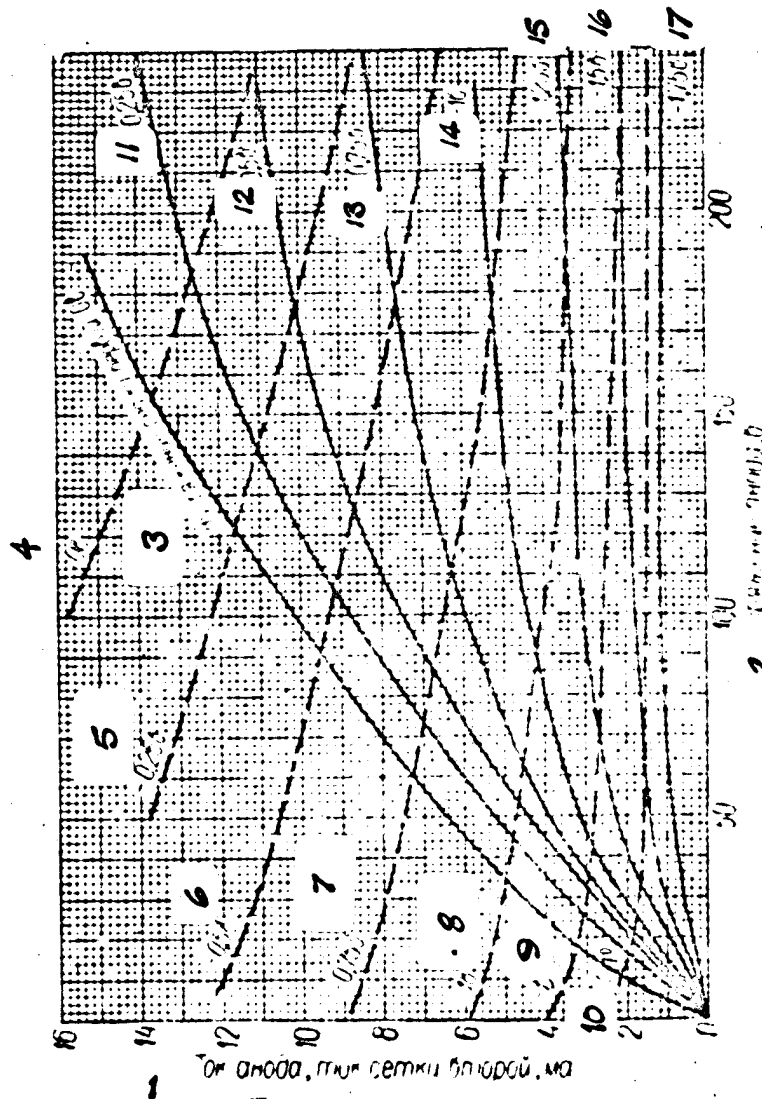
(Above material published April 1959, PKB, Sheet 1)

DUAL-GRID CONTROL SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh10P

Average Characteristics

———— Plate; ----- grid-plate (for screen grid); heater voltage, 6.3 v; screen voltage, 100 v; suppressor voltage, 0 v.



1) Plate current, screen current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) 0 v; 5) -0.25 v; 6) -0.5 v; 7) -0.75 v; 8) -1 v; 9) -1.25 v; 10) -1.5 v; 11) -0.25 v; 12) -0.5 v; 13) -0.75 v; 14) -1 v; 15) -1.25 v; 16) -1.5 v; 17) -1.75 v.

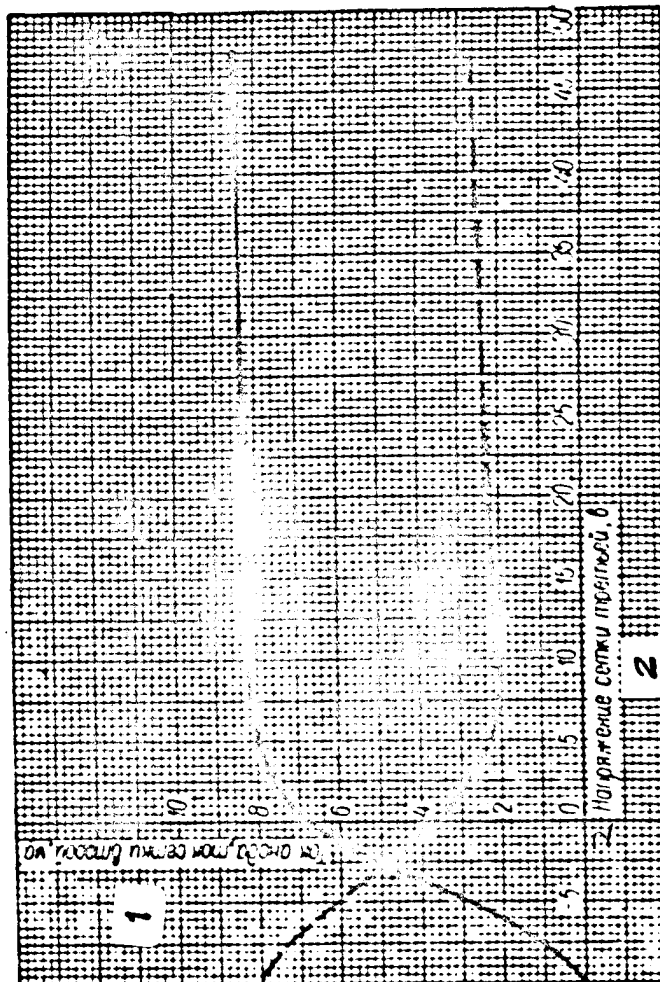
(Above material published April 1959, PKB, G-1)

DUAL-GRID CONTROL SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh10P

Average Characteristics

———— Plate-grid; ----- grid (for screen grid); heater voltage, 6.3 v; plate voltage, 200 v; screen voltage, 100 v; first-grid voltage, -0.85 v.



1) Plate current, screen current, ma; 2) suppressor voltage, v.

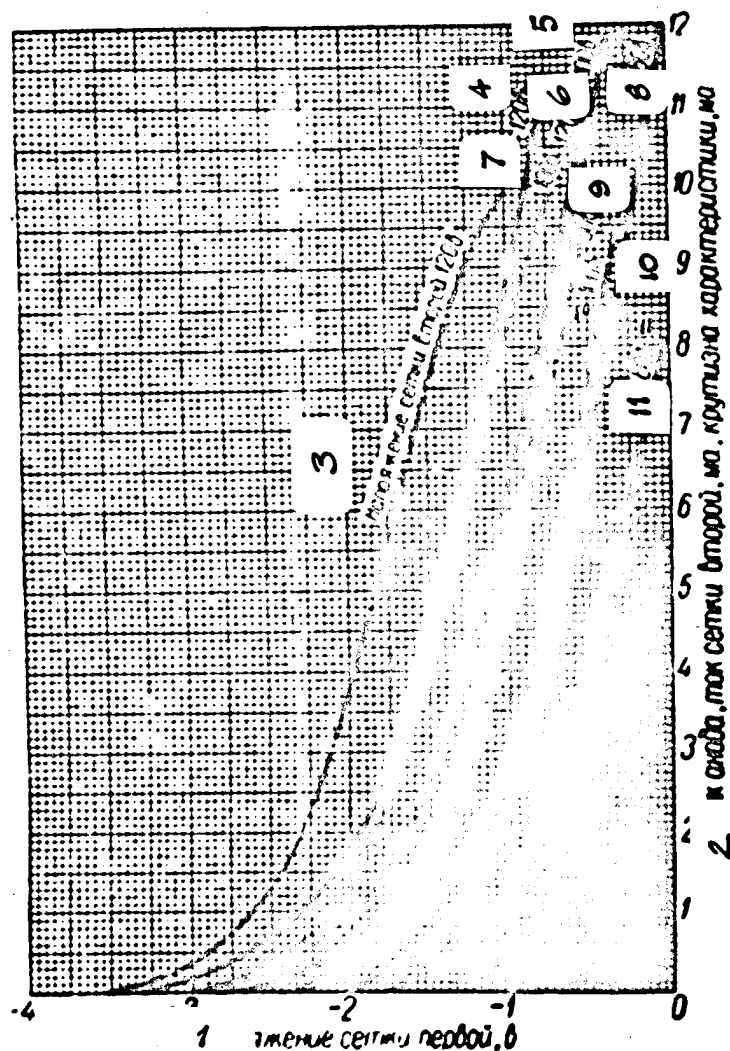
(Above material published April 1959, PKB, G-3)

DUAL-GRID CONTROL SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh10P

Average Characteristics

———— Plate-grid; ----- grid (for screen grid); -.-.-.- mutual conductances; heater voltage, 6.3 v; plate voltage, 200 v; suppressor voltage, 0 v.



- 1) First-grid voltage, v; 2) plate current, screen current, ma, mutual conductance, ma [sic]; 3) screen voltage, 120 v; 4) 120 v; 5) 100 v; 6) 120 v; 7) 100 v; 8) 80 v; 9) 80 v; 10) 100 v; 11) 80 v.

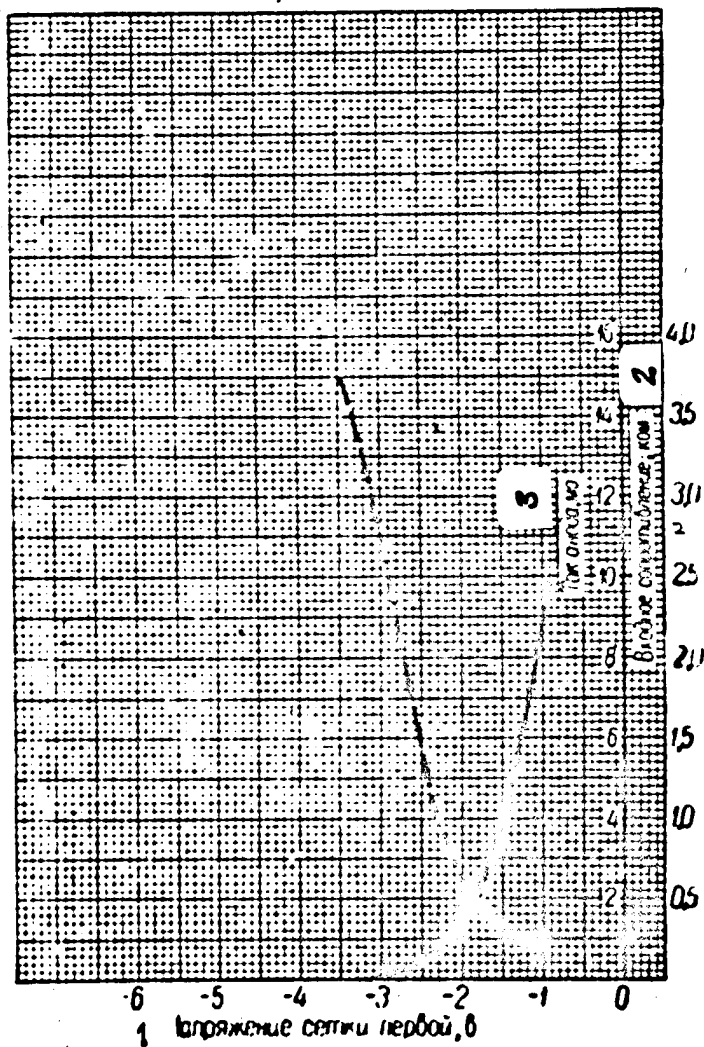
(Above material published April 1959, PKB, G-2)

DUAL-GRID CONTROL SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh10P

Average Characteristics

———— Plate-grid; ----- input resistance as a function of first-grid voltage; heater voltage, 6.3 v; plate voltage, 200 v; screen voltage, 120 v; suppressor voltage, 0 v; frequency, 210 Mc.



1) First-grid voltage, v; 2) input resistance, kohm; 3) plate current, ma.

(Above material published April 1959, PKB, G-4)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh11P

Basic function voltage amplification for broad-band amplifiers.Construction glass miniature.General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Maximum weight
 Number of pins
 Dimension drawing — 15P

60 mm
 22.5 mm
 17 grams
 9

Connection Diagram for Electrodes and Pins

1 — катод

2 — сетка первая

3 — катод

4 — подогреватель

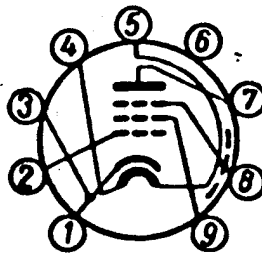
5 — подогреватель

6 — не подсоединен

7 — анод

8 — сетка третья,
экран

9 — сетка вторая



1) Cathode; 2) first grid; 3) cathode; 4) heater; 5) heater; 6) not connected; 7) plate; 8) suppressor, shield; 9) screen.

Electrical Data

Heater voltage (~ or =)

Heater current

Plate voltage (=)

Screen voltage (=)

Suppressor voltage (=)

Resistance in cathode circuit, self biasing

Plate current

Screen current

Transconductance

Transconductance for heater voltage of
5.7 v

Internal resistance

Negative first-grid voltage for plate
current of 10 μ aNegative first-grid electron-current
cut-off voltage

6.3 v
 440 + 30 ma
 150 v
 150 v
 0 v
 50 ohms
 25 $\pm$ 7.5 ma
 no more than 7.5 ma
 28 $\pm$ 7 ma/v

no less than 17 ma/v
 34 kohm

no more than 15 v

no more than 1.5 v

Preliminary data.

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE

6Zh11P

First-grid back current*	no more than 0.5 μ a
Leakage current between cathode and heater**	no more than 30 μ a
Service life	2000 hours
Service-life criteria:	
transconductance	no less than 16.8 ma/v
first-grid back current	no more than 1.5 μ a

*For first-grid voltage of -2 v.
 **For voltage between heater and cathode of ± 150 v.

Interelectrode Capacitances

Input	14 $\pm$ 2 μ mf
Output	3.5 $\pm$ 0.5 μ mf
Transfer*	no more than 0.005 μ mf
Cathode-heater	no more than 10 μ mf
First grid-heater*	no more than 0.15 μ mf

*Measured within shield.

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	6.6 v
Minimum heater voltage ($\sim$ or $=$)	6 v
Maximum plate voltage ($=$)	150 v
Maximum screen voltage ($=$)	150 v
Maximum plate power dissipation	4.9 watts
Maximum screen power dissipation	1.15 watts
Maximum cathode current	40 ma
Maximum voltage between cathode and heater ($=$)	100 v
Maximum resistance in first-grid circuit	0.3 megohm

Preliminary data.

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE (With Cathode Grid)

6Zh21P

Basic function radio-frequency voltage amplification in broad-band amplifiers and generation of nanosecond pulses.

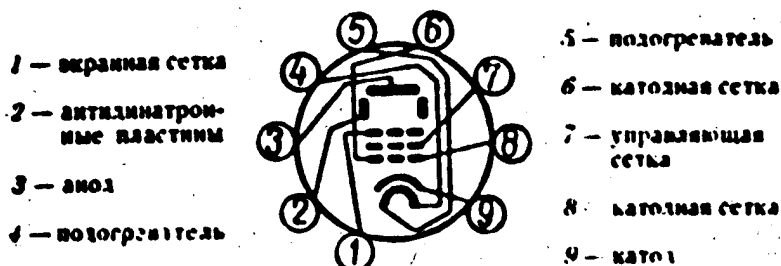
Construction glass miniature.

General Data

Cathode — oxide-coated heater-type
Maximum height
Maximum diameter
Maximum weight
Number of pins
Dimension drawing — 15P

60 mm
22.5 mm
15 grams
9

Connection Diagram for Electrodes and Pins



- 1) Screen grid; 2) space-charge limiting plate; 3) plate; 4) heater;
5) heater; 6) cathode grid; 7) control grid; 8) cathode grid;
9) cathode.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	350 ± 35 ma
Plate voltage (=)	150 v
Screen voltage (=)	150 v
Cathode-grid voltage (=)	12.6 v
Control-grid voltage (=)	-1.1 v
Plate current	17 ± 4.4 ma
Screen current	5 ma
Cathode-grid current	35 ma
Transconductance	17 ± 4.4 ma/v
Internal resistance	60 kohm
Internal resistance at frequency of 200 Mc	0.5 kohm
Equivalent noise resistance	1 kohm
Broad-band factor	2.5
Control-grid back current	no more than 0.5 μa
Service life	500 hours
Service-life criterion: transconductance	no less than 10 ma/v

Preliminary Data.

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE
(With Cathode Grid)

6Zh21P

Interelectrode Capacitances

Input	5.9 ± 0.5 μuf
Output	1.9 ± 0.2 μuf
Transfer	no more than 0.035

Maximum Permissible Operating Data*

Maximum heater voltage {~ or =}	7 v
Minimum heater voltage {~ or =}	5.7 v
Maximum plate voltage (=)	200 v
Maximum screen voltage (=)	200 v
Maximum cathode-grid voltage {=}	13.8 v
Minimum cathode-grid voltage {=}	11.5 v
Maximum plate power dissipation	3 watts
Maximum screen power dissipation	0.9 watt
Maximum cathode-grid power dissipation	0.55 watt
Minimum voltage between cathode and heater (=):	
with heater at negative potential	150 v
with heater at positive potential	0 v
Maximum resistance in control-grid circuit	0.3 megohm

*For continuous operation.

Preliminary data.

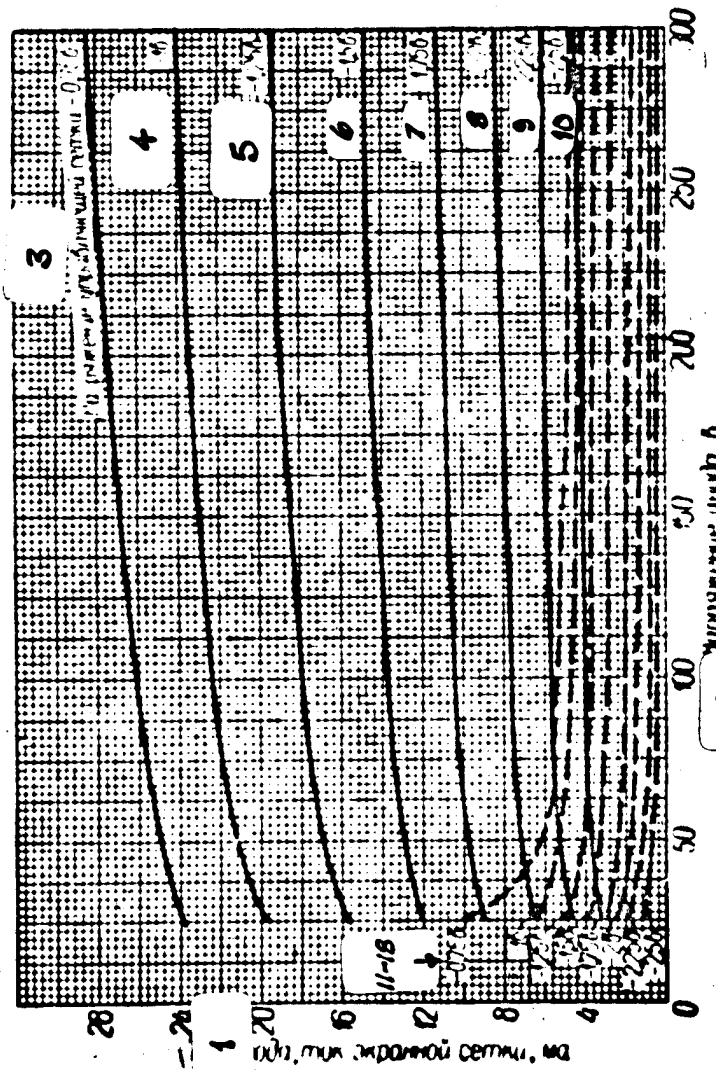
(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE (With Cathode Grid)

6Zh21P

Average Characteristics

— Plate; ----- grid-plate (for screen grid); heater voltage, 6.3 v; cathode-grid voltage, 12.6 v; screen voltage, 150 v.



- 1) Plate current, screen current, ma; 2) plate voltage, v; 3) control-grid voltage, -0.75 v; 4) -1 v; 5) -1.25 v; 6) -1.5 v; 7) -1.75 v; 8) -2 v; 9) -2.25 v; 10) -2.5 v; 11) -0.75 v; 12) -1 v; 13) -1.25 v; 14) -1.5 v; 15) -1.75 v; 16) -2 v; 17) -2.25 v; 18) -2.5 v.

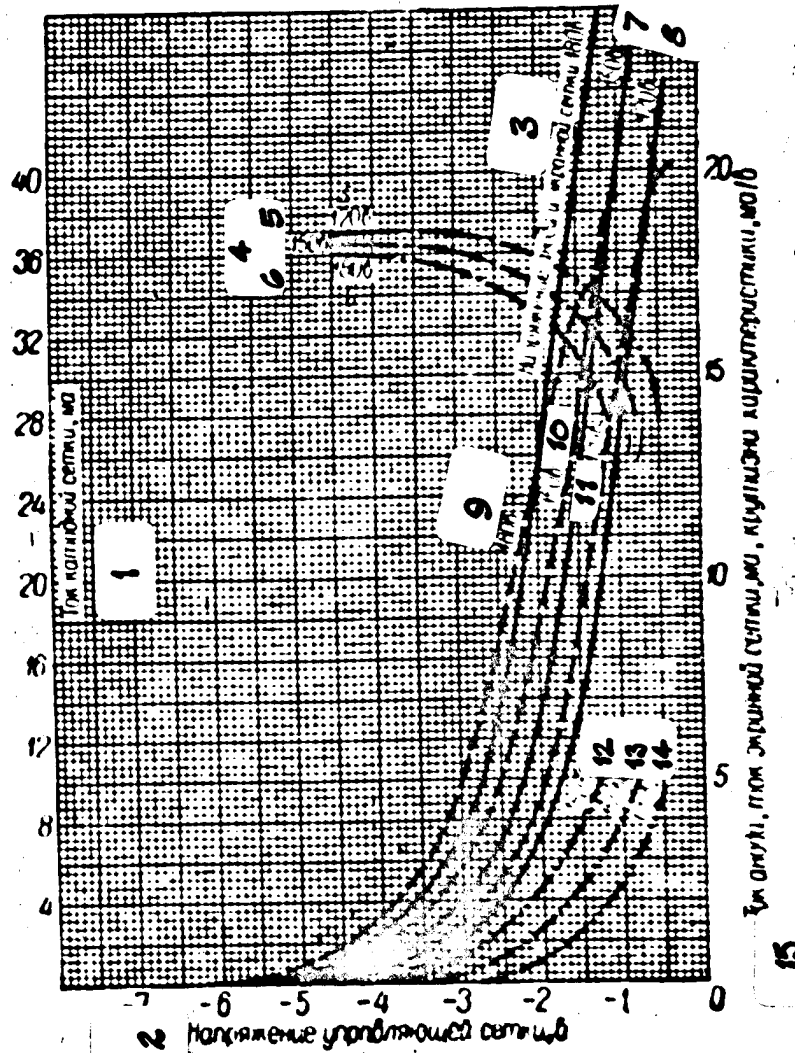
(Above material published April 1959, PKB, G-1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE (With Cathode Grid)

6Zh21P

Average Characteristics

———— Plate-grid; - - - - - grid (for cathode grid); - - - - - grid (for screen grid); ----- mutual conductance; heater voltage, 6.3 v; cathode-grid voltage, 12.6 v.



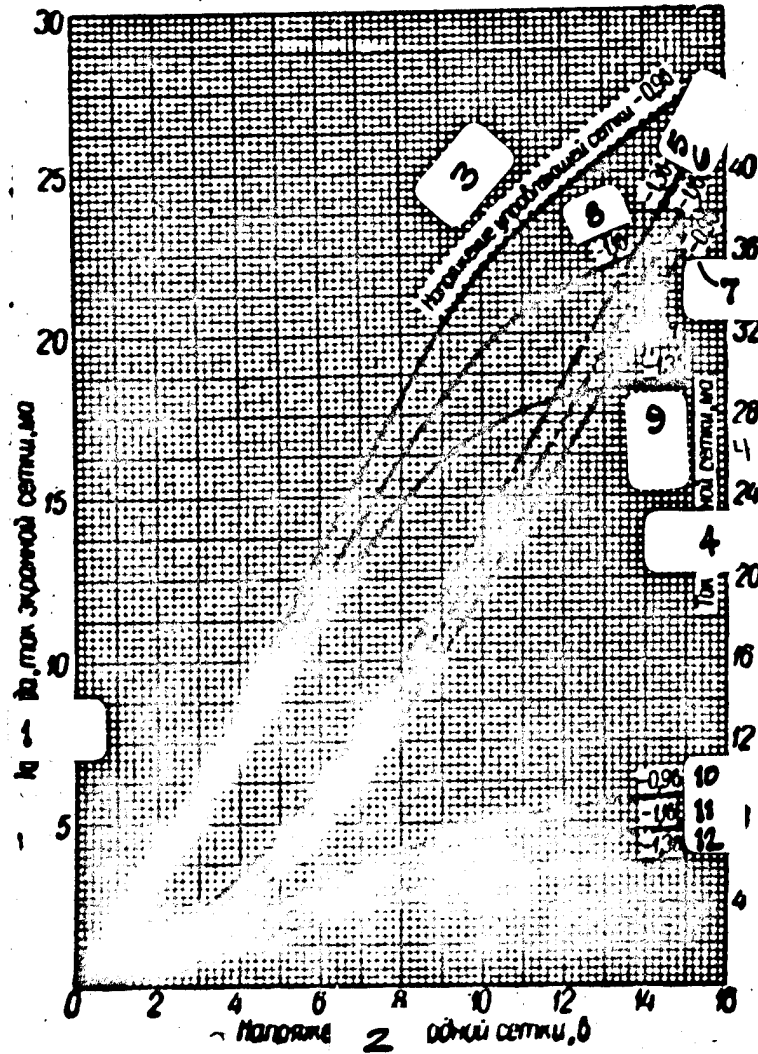
- 1) Cathode-grid current, ma; 2) control-grid voltage, v; 3) plate voltage and screen voltage, 180 v; 4) 150 v; 5) 120 v; 6) 180 v; 7) 150 v; 8) 120 v; 9) 180 v; 10) 150 v; 11) 120 v; 12) 180 v; 13) 150 v; 14) 120 v; 15) plate current, screen current, ma, mutual conductance, ma/v.
(Above material published April 1959, PKB, G-3)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE (With Cathode Grid)

6Zh21P

Average Characteristics

———— Plate-grid; ----- grid (for screen); -.-.-.- grid (for cathode grid); heater voltage, 6.3 v; plate voltage, 150 v; screen voltage, 150 v.



- 1) Plate current, screen current, ma; 2) cathode-grid voltage, v;
- 3) control-grid voltage, -0.9 v; 4) cathode-grid current, ma; 5) -1.3 v;
- 6) -1.1 v; 7) -0.9 v; 8) -1.1 v; 9) -1.3 v; 10) -0.9 v; 11) -1.1 v;
- 12) -1.3 v.

(Above material published April 1959, PKB, G-2)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE (With Cathode Grid)

6Zh22P

Basic function radio-frequency voltage amplification in broad-band amplifiers and formation of nanosecond pulses.

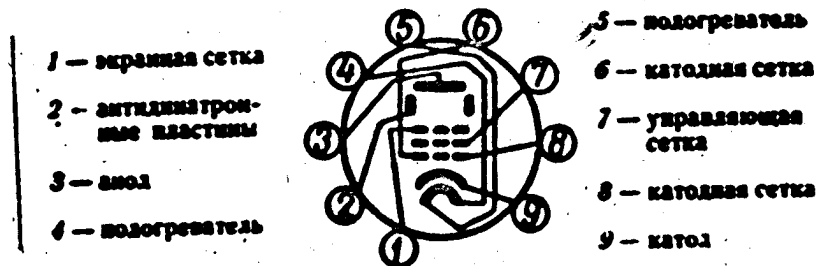
Construction glass miniature.

General Data

Cathode — oxide-coated heater-type
Maximum height
Maximum diameter
Maximum weight
Number of pins
Dimension drawing — 16P

70 mm
22.5 mm
20 grams
9

Connection Diagram for Electrodes and Pins



1) Screen grid; 2) space-charge limiting plate; 3) plate; 4) heater;
5) heater; 6) cathode grid; 7) control grid; 8) cathode grid;
9) cathode.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	500 ± 50 ma
Plate voltage (=)	150 v
Screen voltage (=)	150 v
Cathode-grid voltage (=)	12.6 v
Control-grid voltage (=)	-1.2 v
Plate current	30 ± 7.5 ma
Screen current	7.5 ma
Cathode-grid current	65 ma
Transconductance	30 ± 7.8 ma/v
Internal resistance	65 kohm
Input resistance	0.3 kohm
Broad band factor	2.63
Equivalent noise resistance	0.5 kohm
Negative control-grid voltage for plate current of 10 μ a	no more than 15 v

Preliminary data.

(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE
(With Cathode Grid)

6Zh22P

Negative control-grid electron-current cut-off voltage	no more than 1.1 v
Control-grid back current	no more than 1 μ a
Service life	500 hours
Service-life criterion: transconductance	no less than 18 ma/v

Interelectrode Capacitances

Input	9 $\pm$ 0.9 μ f
Output	2.4 $\pm$ 0.2 μ f
Transfer	no more than 0.05 μ f

Maximum Permissible Operating Data*

Maximum heater voltage ($\sim$ or $=$)	7 v
Minimum heater voltage ($\sim$ or $=$)	5.7 v
Maximum plate voltage ($=$)	200 v
Maximum screen voltage ($=$)	200 v
Maximum cathode-grid voltage ($=$)	13.8 v
Minimum cathode-grid voltage ($=$)	11.5 v
Maximum plate power dissipation	5.5 watts
Maximum screen power dissipation	1.5 watts
Maximum cathode-grid power dissipation	1 watt
Maximum voltage between cathode and heater, heater at negative potential ($=$)	150 v
Maximum resistance in control-grid circuit	0.15 megohm

*For continuous operation.

Preliminary data.

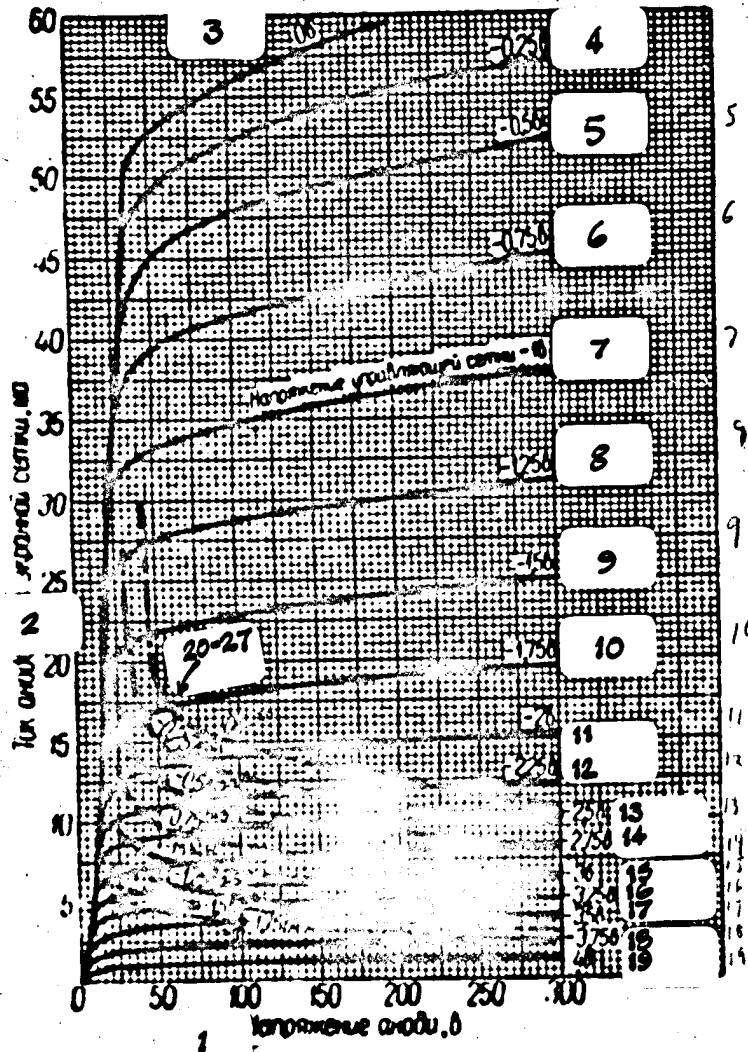
(Above material published April 1959, PKB, Sheet 1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE (With Cathode Grid)

6Zh22P

Average Characteristics

———— Plate; ----- grid-plate (for screen grid); heater voltage, 6.3 v; cathode-grid voltage, 12.6 v; screen voltage, 150 v.



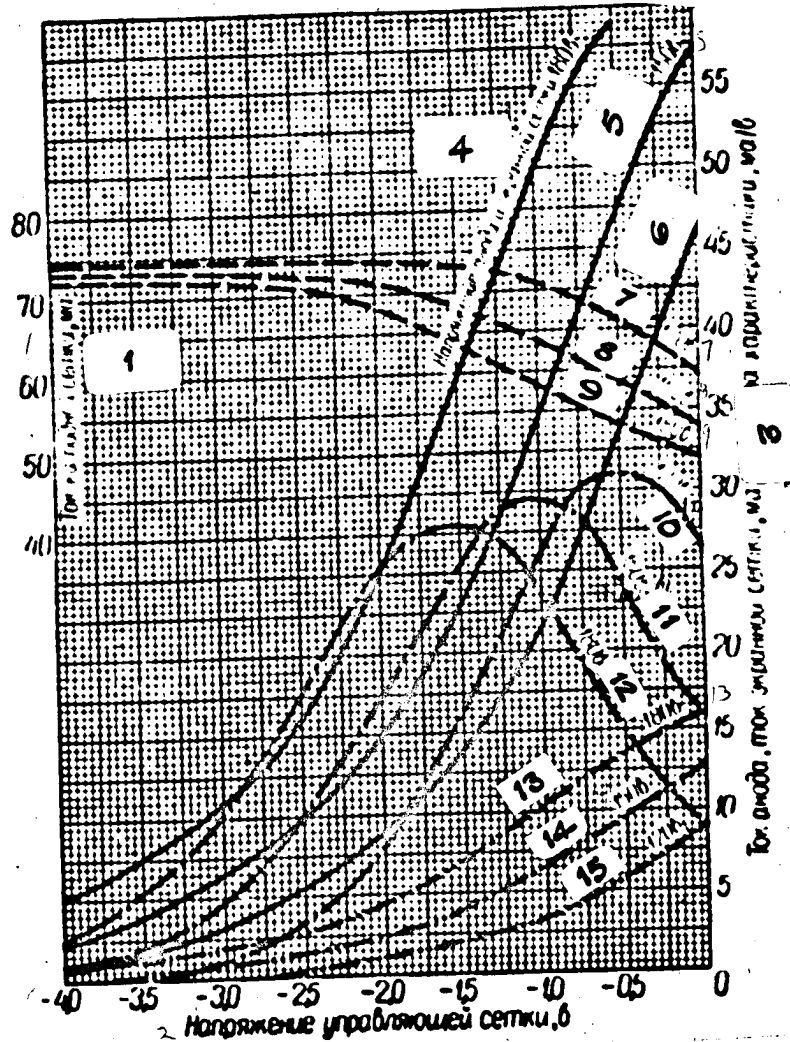
- 1) Plate current, screen current, ma; 2) plate voltage, v; 3) 0 v;
 4) -0.25 v; 5) -0.5 v; 6) -0.75 v; 7) control-grid voltage, -1 v;
 8) -1.25 v; 9) -1.5 v; 10) -1.75 v; 11) -2 v; 12) -2.25 v; 13) -2.5 v;
 14) -2.75 v; 15) -3 v; 16) -3.25 v; 17) -3.5 v; 18) -3.75 v; 19) -4 v;
 20) 0 v; 21) -0.25 v; 22) -0.5 v; 23) -0.75 v; 24) -1 v; 25) -1.25 v;
 26) -1.5 v; 27) -1.75 v.
 (Above material published April 1959, PKB, G-1)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE (With Cathode Grid)

6Zh22P

Average Characteristics

———— Plate-grid; - - - - - grid (for screen grid); - - - - - grid (for cathode grid); - - - - - mutual conductances; heater voltage, 6.3 v; cathode-grid voltage, 12.6 v.



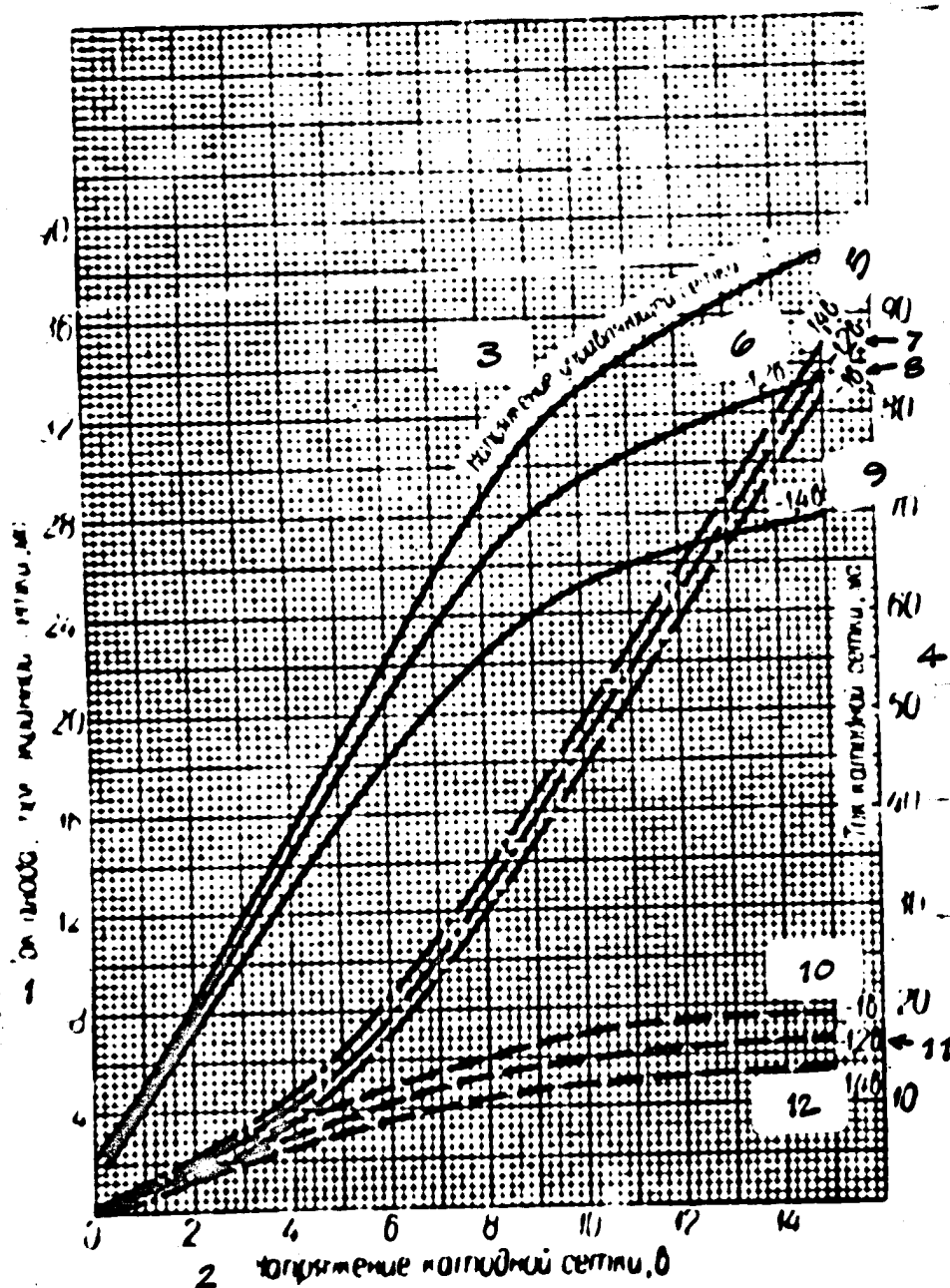
- 1) Cathode-grid current, ma; 2) control-grid voltage, v; 3) plate current, screen current, ma, mutual conductance, ma/v; 4) plate voltage and screen voltage, 180 v; 5) 150 v; 6) 120 v; 7) 120 v; 8) 150 v; 9) 180 v; 10) 120 v; 11) 150 v; 12) 180 v; 13) 180 v; 14) 150 v; 15) 120 v.
(Above material published April 1959, PKB, G-3)

SHARP-CUTOFF RADIO-FREQUENCY PENTODE (With Cathode Grid)

6Zh22P

Average Characteristics

— Plate-grid; - - - - - grid (for screen grid); - · - · - · grid (for cathode grid); Heater voltage, 6.3 v; plate voltage, 150 v; screen voltage, 150 v.



- 1) Plate current, screen current, ma; 2) cathode-grid voltage, v;
3) control-grid voltage, -1 v; 4) cathode-grid current, ma; 5) -1.4 v;
6) -1.2 v; 7) -1.2 v; 8) -1 v; 9) -1.4 v; 10) -1 v; 11) -1.2 v;
12) -1.4 v.

(Above material published April 1959, PKB, G-2)

RADIO-FREQUENCY PENTODE WITH TWO SEPARATE PLATES 6Zh23P

Basic function voltage amplification in broad-band amplifiers with separate output signals.

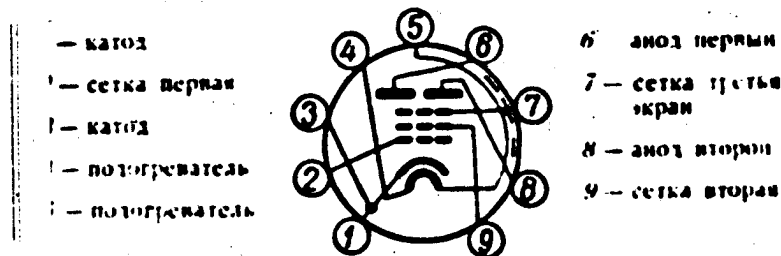
Construction glass miniature.

General Data

Cathode — oxide-coated heater-type
Maximum height
Maximum diameter
Maximum weight
Number of pins
Dimension drawing — 15P

60 mm
22.5 mm
17 grams
9

Connection Diagram for Electrodes and Pins



- 1) Cathode; 2) first grid; 3) cathode; 4) heater; 5) heater;
6) first plate; 7) suppressor grid, shield; 8) second plate;
9) screen grid.

Electrical Data

Heater voltage ($\sim$ or $=$)	6.3 v
Heater current	440 ± 30 ma
Plate voltages ($=$)	150 v
Screen voltage ($=$)	150 v
Suppressor voltage ($=$)	0 v
Resistance in cathode circuit self biasing	50 ohms
Current for each plate	12.5 ± 3.75 ma
Screen current	no more than 7.5 ma
Transconductance, each plate	14 ± 3.5 ma/v
Transconductance, each plate, for heater voltage of 5.7 v	no less than 8.5 ma/v
First-grid voltage for plate currents, plate connected, of 10 μ a	no more than 15 v
Negative first-grid electron-current cut-off voltage	no more than 1.5 v

(Above material published April 1959, PKB, Sheet 1)

RADIO-FREQUENCY PENTODE WITH TWO SEPARATE PLATES 6Zh23P

First-grid back current*	no more than 0.5 μ a
Leakage current between cathode and heater**	no more than 30 μ a
Service life	2000 hours
Service-life criteria:	
transconductance, each plate	no less than 8.4 ma/v
first-grid back current	no more than 1.5 μ a

*For first-grid voltage of -2 v.
 **With voltage between cathode and heater of $\pm$ 150 v.

Interelectrode Capacitances

Input	14 + 2 μ mf
Output*	3.5 $\pm$ 0.5 μ mf
Transfer**, *	no more than 0.07 μ mf
Cathode-heater	no more than 10 μ mf
First grid-heater**	no more than 0.15 μ mf

*Plates connected together.
 **Measured inside shield.

Maximum Permissible Operating Data

Maximum heater voltage { ~ or = }	6.6 v
Minimum heater voltage { ~ or = }	6 v
Maximum plate voltages { = }	150 v
Maximum screen voltage { = }	150 v
Maximum plate power dissipation, each plate	2.45 watts,
Maximum screen power dissipation	1.15 watts
Maximum cathode current	40 ma
Maximum voltage between cathode and heater (=)	100 v
Maximum resistance in first-grid circuit	0.3 megohm

(Above material published April 1959, PKB, Sheet 1)

TRIODE-HEPTODE, COMMON CATHODE

6I1P

Basic function frequency conversion.Construction glass miniature.General Data

Cathode — oxide-coated heater-type

Maximum height

Maximum diameter

Maximum weight

Number of pins

Dimension drawing — 19P

80 mm

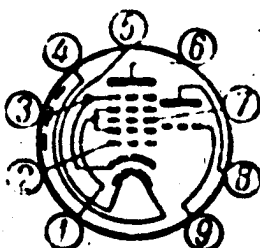
22.5 mm

20 grams

9

Connection Diagram for Electrodes and Pins1 — сетки вторая и
четвертая геп-
тода2 — сетка первая
гептода3 — катод, сетка
пятая гептода
и экран

4 — подогреватель



5 — подогреватель

6 — анод гептода

7 — сетка третья
гептода

8 — анод триода

9 — сетка триода

1) Second and fourth heptode grids; 2) heptode first grid; 3) cathode and fifth grid of heptode, shield; 4) heater; 5) heater; 6) heptode plate; 7) third grid of heptode; 8) triode plate; 9) triode grid.

Electrical Data

Heater voltage (~ or =)

Heater current

Service life

Service-life criteria:

triode transconductance*

heptode conversion transconductance**

no less than 1.4 ma/v

no less than 0.45 ma/v

6.3 v

300 ± 25 ma

750 hours

Triode Section.

Plate voltage (=)

Grid voltage (=)

Plate current ***

Grid current **

Transconductance***

Amplification factor

100 v

0 v

13.3 + 4.75 ma

200 μa

3.7 ma/v

23.5

*For triode grid voltage of -2 v;

**Under dynamic conditions. Grid connected to heptode third grid.

Alternating grid voltage 8.5 v (eff); resistance in grid circuit, 47 kohm.

***For grid voltage of 0 v.

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

TRIODE-HEPTODE, COMMON CATHODE

611P

Maximum triode plate power dissipation	0.8 watt
Maximum heptode plate power dissipation	1.7 watts
Maximum heptode second and fourth grid power dissipation	1 watt
Maximum triode cathode current	6.5 ma
Maximum heptode cathode current	12.5 ma
Maximum voltage between cathode and heater (=)	100 v
Maximum resistance in heptode first-grid circuit	2 megohm
Maximum voltage in heptode third-grid circuit	3 megohm
Maximum resistance in triode grid circuit	0.5 megohm

Standard Operating Conditions

I. Radio-frequency Conversion Operation

	№ 1	№ 2	№ 3	№ 4
1 Напряжение питания анодов, в	100	170	200	250
2 Напряжение сетки первой гектоды, в минус	1,1	2	2,4	2
3 Напряжение второй и четвертой сеток гектоды, в	60	100	114	103
4 Сопротивление автоматического смещения в цепи катода, ом	150	150	150	140
5 Сопротивление в цепи сеток второй и четвертой гектоды, ком	12	12	12	22
6 Сопротивление в цепи сетки триода и третьей сетки гектоды, ком	47	47	47	47
7 Сопротивление в цепи анода триода, ком	15	15	15	33
8 Ток анода триода, ма	2,5	4,5	5,4	4,5
9 Постоянная составляющая тока сетки триода, ма	0,12	0,20	0,24	0,20
10 Ток анода гектоды, ма	1,5	2,9	3,25	3,25
11 Ток сеток второй и четвертой гектоды, ма	3,3	6,0	7,2	6,7
12 Крутизна преобразования гектоды, ма/в	0,56	0,725	0,75	0,775
13 Внутреннее сопротивление гектоды, Мом	0,95	0,9	1	1
14 Эквивалентное сопротивление шумов, ком	62	70	75	70

- 1) Plate supply voltage, v; 2) heptode first-grid voltage, v, minus; 3) heptode second and fourth grid voltages, v; 4) self-biasing resistance in cathode circuit, ohms; 5) resistance in second and fourth heptode-grid circuits, kohm; 6) resistance in triode grid circuit and heptode third-grid circuit, kohm; 7) resistance in triode plate circuit, kohm; 8) triode plate current, ma; 9) DC component of triode grid current, ma; 10) heptode plate current, ma; 11) heptode second- and fourth-grid currents, ma; 12) heptode conversion transconductance, ma/v; 13) heptode internal resistance, megohm; 14) equivalent noise resistance, kohm.

(Above material published April 1959, PKB, Sheet 2)

TRIODE-HEPTODE, COMMON CATHODE

6I1P

Heptode Section

Plate voltage (=)	250 v
Second- and fourth-grid voltage (=)	100 v
First-grid voltage (=)	-2 v
Suppressor voltage (=)	0 v
Plate current	7 ma
Plate current*	3.3 ± 1.2 ma
Second- and fourth-grid currents	3.5 ma
Second- and fourth-grid currents*	6 ± 2 ma
Conversion transconductance*	0.77 ma/v
Conversion transconductance for first-grid voltage of -28.5 v*	no less than 2 µa/v
Transconductance	2.5 ma/v
Internal resistance*	about 0.7 megohm
First-grid back current	no more than 0.5 µa

*Under dynamic conditions. Third grid connected to triode grid.
 Alternating triode grid voltage, 8.5 v (eff); resistance in grid circuit, 47 kohm.

Interelectrode Capacitances

Triode input	2.6 ± 0.6 µmf
Triode output	2 ± 0.3 µmf
Triode transfer	1 ± 0.2 µmf
Heptode input, first grid	5.1 ± 1 µmf
Heptode input, third grid	6.3 ± 1.3 µmf
Heptode output	7.4 ± 1.4 µmf
Heptode transfer	no more than 0.006 µmf
Triode plate-heptode plate	no more than 0.24 µmf
Triode plate-heptode first grid	no more than 0.06 µmf
Heptode first grid-heptode third grid and triode grid	no more than 0.45 µmf
Heptode first grid-triode grid	no more than 0.17 µmf
Heptode plate-triode plate	no more than 0.1 µmf
Heptode plate-heptode third grid and triode plate	no more than 0.35 µmf

Maximum Permissible Operating Data

Maximum heater voltage (~ or =)	7 v
Minimum heater voltage (~ or =)	5.7 v
Maximum triode plate voltage (=)	250 v
Maximum heptode plate voltage (=)	300 v
Maximum second- and fourth grid voltages (=)	300 v

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

TRIODE-HEPTODE, COMMON CATHODE

6I1P

II. Radio-Frequency and Intermediate-Frequency Operating Conditions

	№ 1	№ 2	№ 3	№ 4
1 Напряжение питания ано- дов, в	100	170	200	250
2 Сопротивление в цепи сеток второй и четвертой геп- тода, ком	18	18	18	39
3 Сопротивление автоматиче- ского смещения в цепи катода, ом	200	200	200	200
4 Напряжение первой сетки гептода, в минус	1.1	2	2.3	2
5 Напряжение сеток второй и четвертой гептода, в	60	100	120	102
6 Ток анода гептода, ма	3.4	6.25	7.45	6.5
7 Ток сеток второй и четвер- той гептода, ма	2.2	3.8	4.4	3.8
8 Крутизна характеристик, ма/в	2.1	2.3	2.4	2.4
9 Внутреннее сопротивление, Мом	0.5	0.6	0.6	0.7
10 Эквивалентное сопротивле- ние шумов, ком	5.8	8.8	9.7	8.5
11 Входное сопротивление ($f = 100 \text{ Мгц}$), ом	—	—	—	1600

1) Plate supply voltage, v; 2) heptode second- and fourth-grid circuit resistances, kohm; 3) self biasing resistance in cathode circuit, ohms; 4) heptode first-grid voltage, v, minus; 5) heptode second- and fourth-grid voltage, v; 6) heptode plate current, ma; 7) heptode second- and fourth-grid currents, ma; 8) transconductance, ma/v; 9) internal resistance, megohm; 10) equivalent noise resistance, kohm; 11) input resistance ($f = 100 \text{ Mc}$), ohms.

III. UHF Frequency-Conversion Conditions

	No. 1	No. 2
Plate power supply voltage, v	250	250
Plate-circuit resistance, kohm	30	30
Grid-circuit resistance, kohm	30	1000
Grid current, μa	190	5.5
Bias voltage, v	-5.7	-5.5
Alternating grid voltage, v (eff)	5	4
Plate current, ma	5	5
Conversion transconductance, ma/v	1.2	1
Internal resistance, kohm	19	17
Input resistance at frequency of 100 Mc, kohm	5	5
Equivalent noise resistance, kohm	8	3

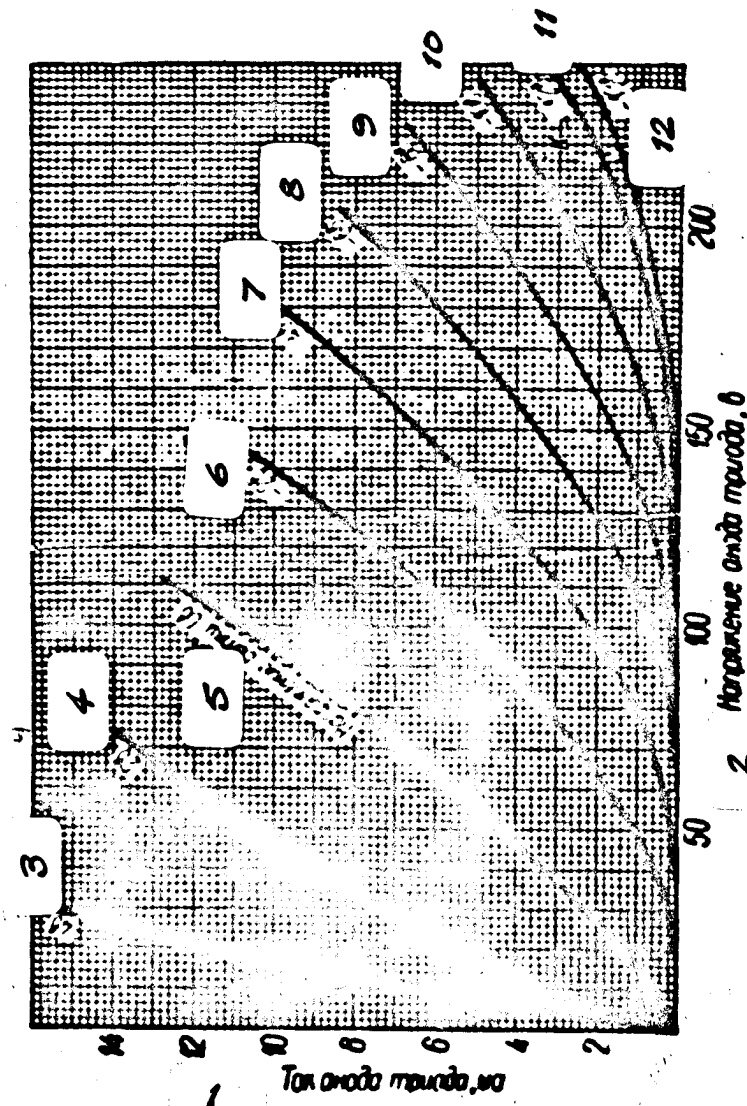
(Above material published April 1959, PKB, Sheet 2)

TRIODE-HEPTODE, COMMON CATHODE

6I1P

Average Triode Plate Curves

Heater voltage, 6.3 v.



1) Triode plate current, ma; 2) triode plate voltage, v; 3) 4 v;
 4) 2 v; 5) grid voltage, 0 v; 6) -2 v; 7) -4 v; 8) -6 v; 9) -8 v;
 10) -10 v; 11) -12 v; 12) -13 v.

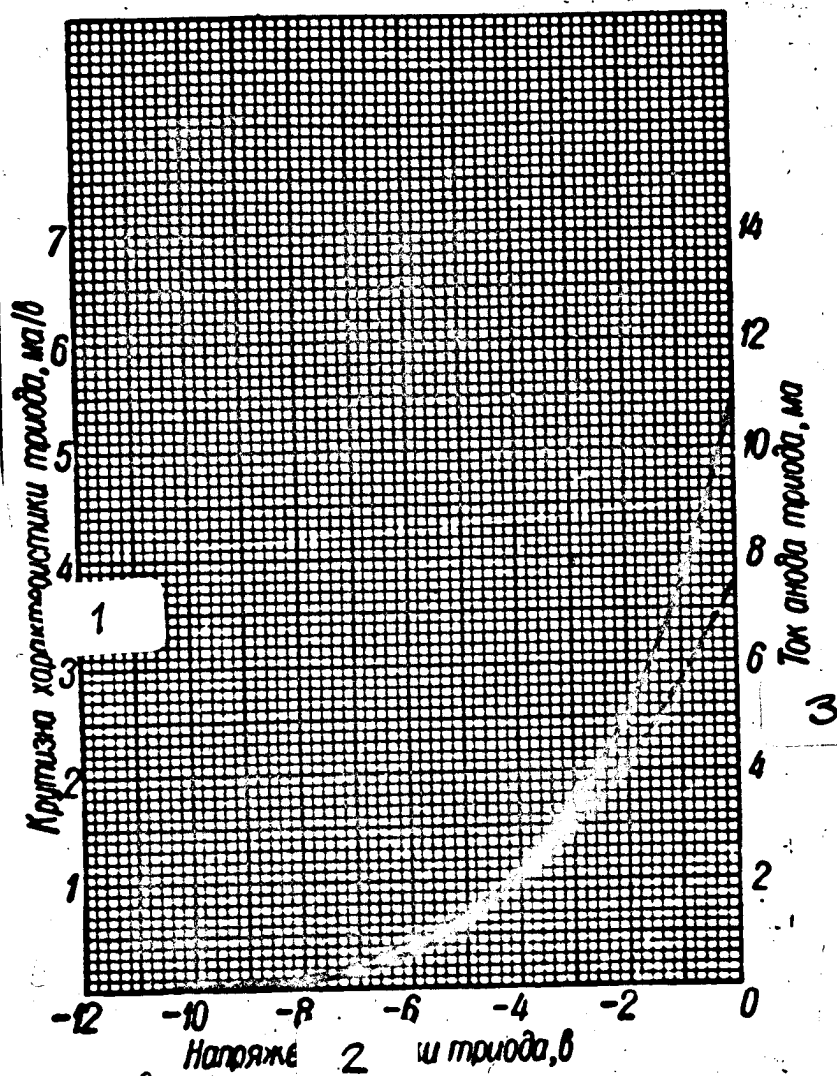
(Above material published April 1959, PKB, G-1)

TRIODE-HEPTODE, COMMON CATHODE

6I1P

Average Triode Curves

— Plate-grid; ----- transconductance; heater voltage, 6.3 v;
triode plate voltage, 100 v.



1) Triode transconductance, ma/v 2) triode grid voltage, v; 3) triode plate current, ma.

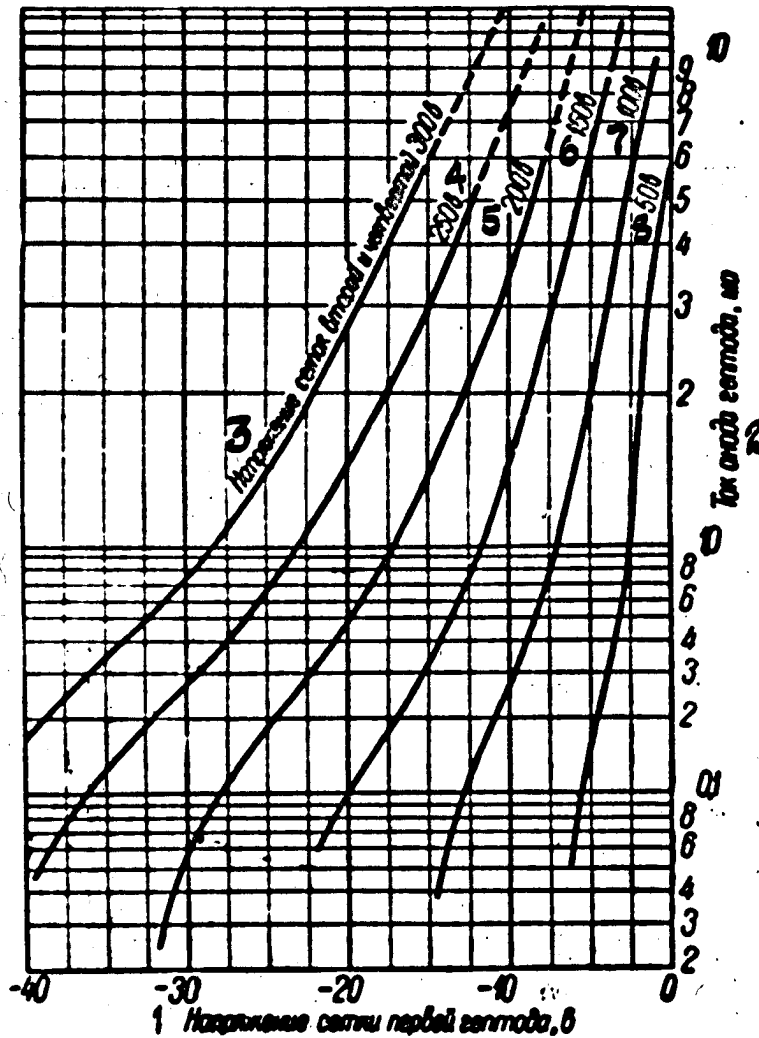
(Above material published April 1959, PKB, G-2)

TRIODE-HEPTODE, COMMON CATHODE

611P

Average Plate-grid Heptode Curves

Heater voltage, 6.3 v; heptode plate voltage, 250 v; triode plate voltage, 100 v; third-grid voltage, 0 v.



- 1) Heptode first-grid voltage, v; 2) heptode plate current, ma;
 3) second- and fourth-grid voltages, 300 v; 4) 250 v; 5) 200 v;
 6) 150 v; 7) 100 v; 8) 50 v.

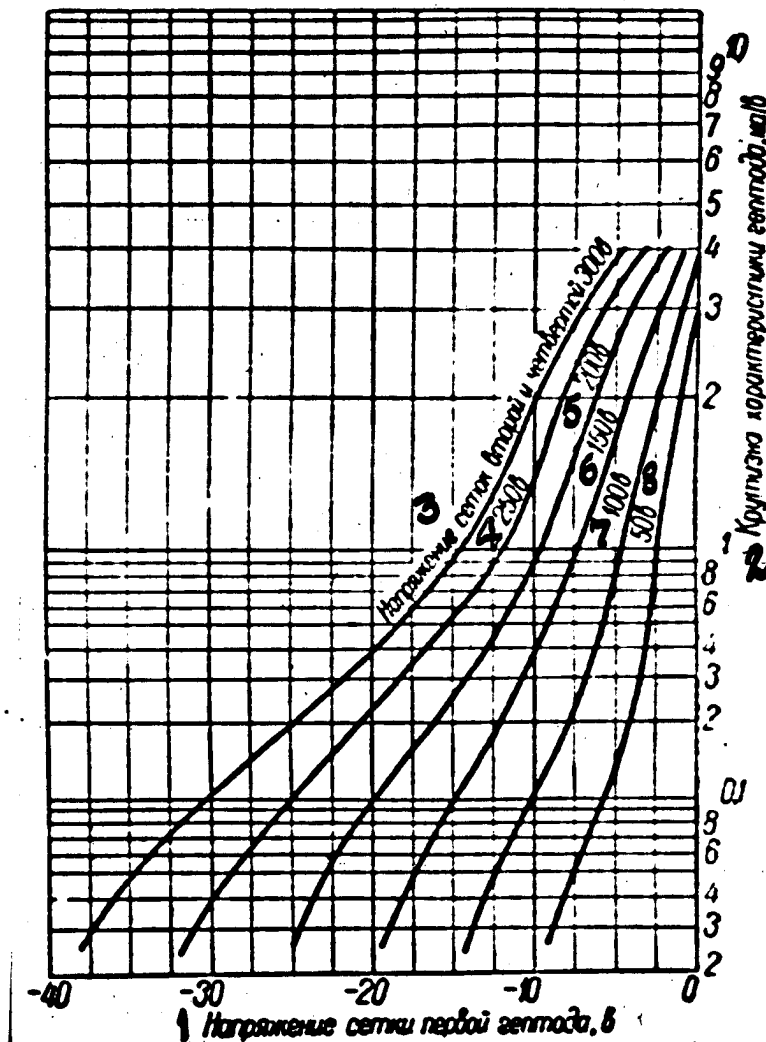
(Above material published April 1959, PKB, G-3)

TRIODE-HEPTODE, COMMON CATHODE

6I1P

Average Heptode Mutual Conductance Curves as Functions of Heptode First-Grid Voltage

Heater voltage, 6.3 v; heptode plate voltage, 250 v; third-grid voltage, 0 v;



- 1) Heptode first-grid voltage, v; 2) heptode mutual conductance, ma/v;
 3) second- and fourth-grid voltages, 300 v; 4) 250 v; 5) 200 v;
 6) 150 v; 7) 100 v; 8) 50 v.

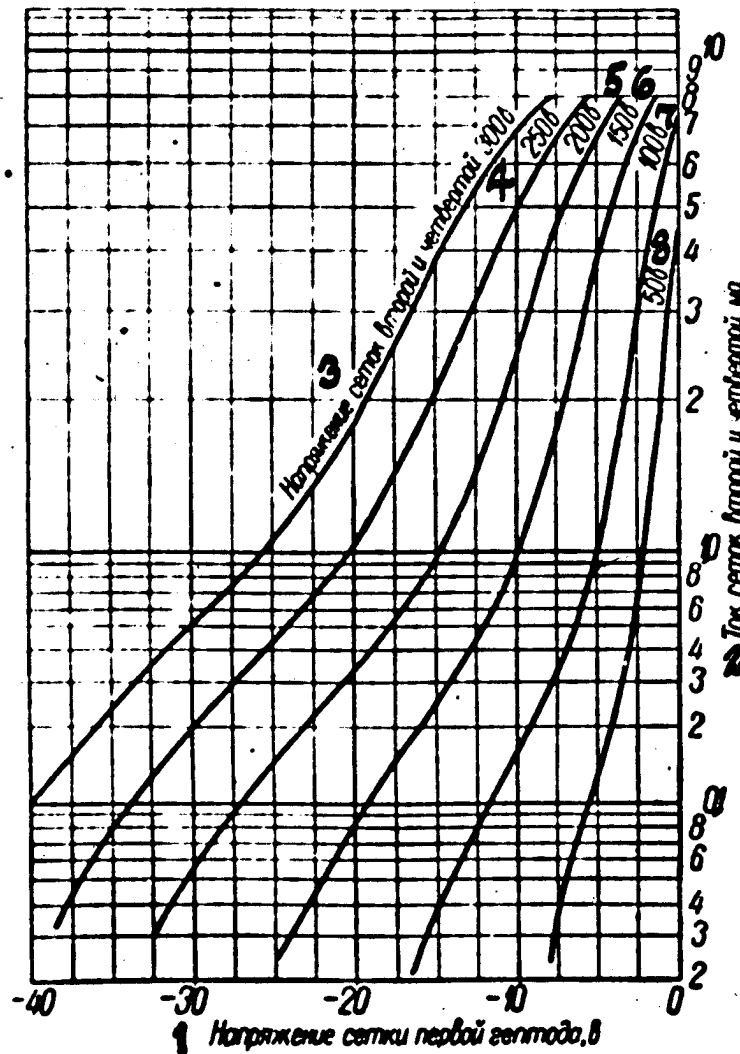
(Above material published April 1959, PKB, G-5)

TRIODE-HEPTODE, COMMON CATHODE

6I1P

Average Heptode Grid Curves

Heater voltage, 6.3 v; heptode plate voltage, 250 v; heptode
Third-grid voltage, 0 v.



1) Heptode first-grid voltage, v; 2) second- and fourth-grid currents, ma; 3) second- and fourth-grid voltages, 300 v; 4) 250 v; 5) 200 v; 6) 150 v; 7) 100 v; 8) 50 v.

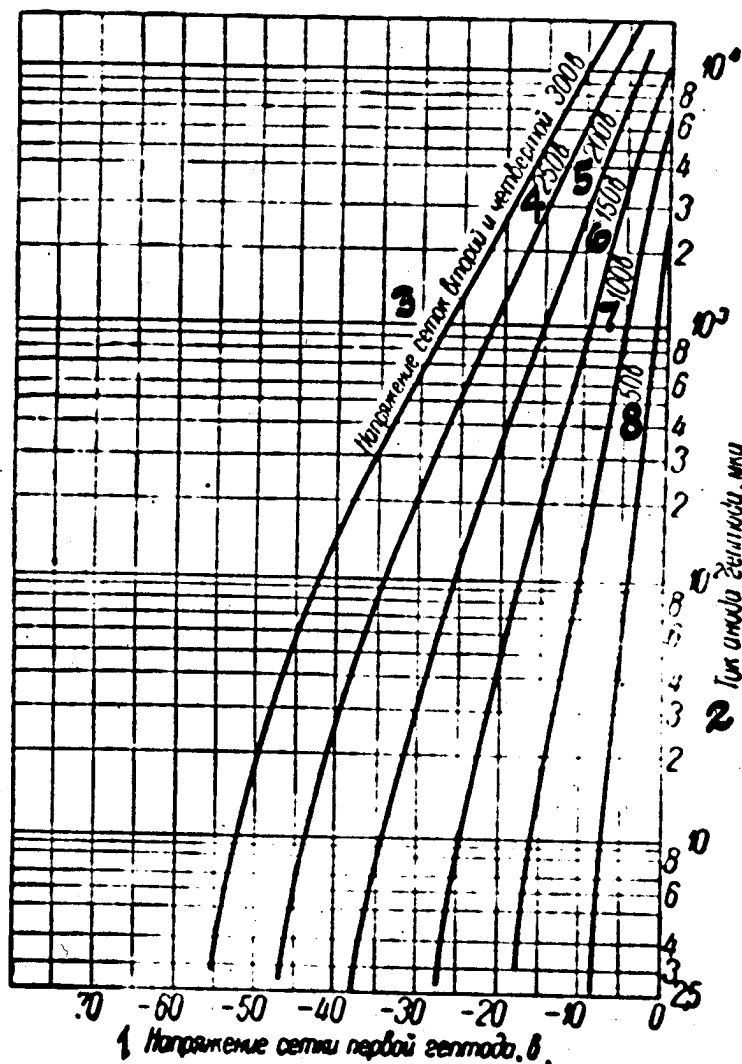
(Above material published April 1959, PKB, G-4)

TRIODE-HEPTODE, COMMON CATHODE

6I1P

Average Dynamic Plate-Grid Heptode Curves

Heater voltage, 6.3 v; heptode plate voltage, 250 v; triode plate voltage, 100 v; alternating voltage on heptode third grid and triode grid, 8.5 v (eff); resistance in heptode third-grid circuit and triode grid circuit, 47 kohm.



- 1) Heptode first-grid voltage, v; 2) heptode plate current, μ A;
 3) second- and fourth-grid voltages, 300 v; 4) 250 v; 5) 200 v;
 6) 150 v; 7) 100 v; 8) 50 v.

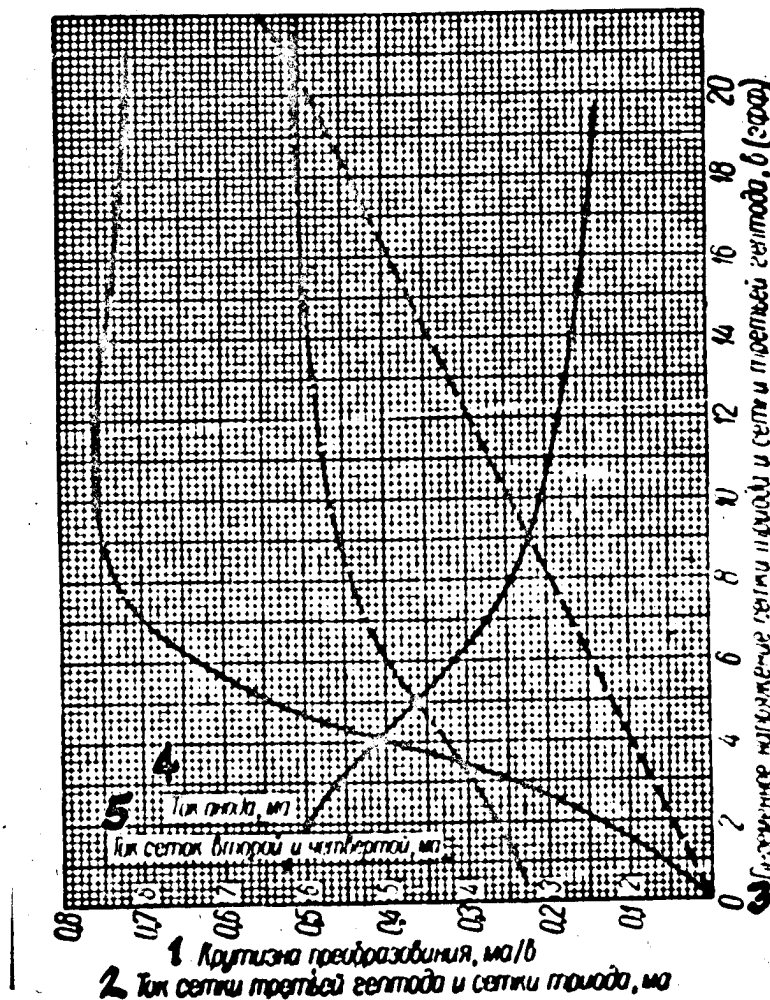
(Above material published April 1959, PKB, G-6)

TRIODE-HEPTODE, COMMON CATHODE

6I1P

Average Heptode Dynamic Characteristics

———— Conversion transconductance; ----- grid; -.-.-.- grid (for second and fourth grids); —.—.— Plate-grid; heater voltage, 6.3 v; heptode plate voltage, 250 v; triode plate voltage 100 v; heptode first-grid voltage, -2 v; resistance in triode grid circuit and heptode third-grid circuit, 47 kohm.



1) Conversion transconductance, ma/v 2) heptode third-grid current and triode-grid current, ma; 3) alternating voltage on triode grid and heptode third grid, v (eff); 4) plate current, ma; 5) second- and fourth-grid currents, ma.

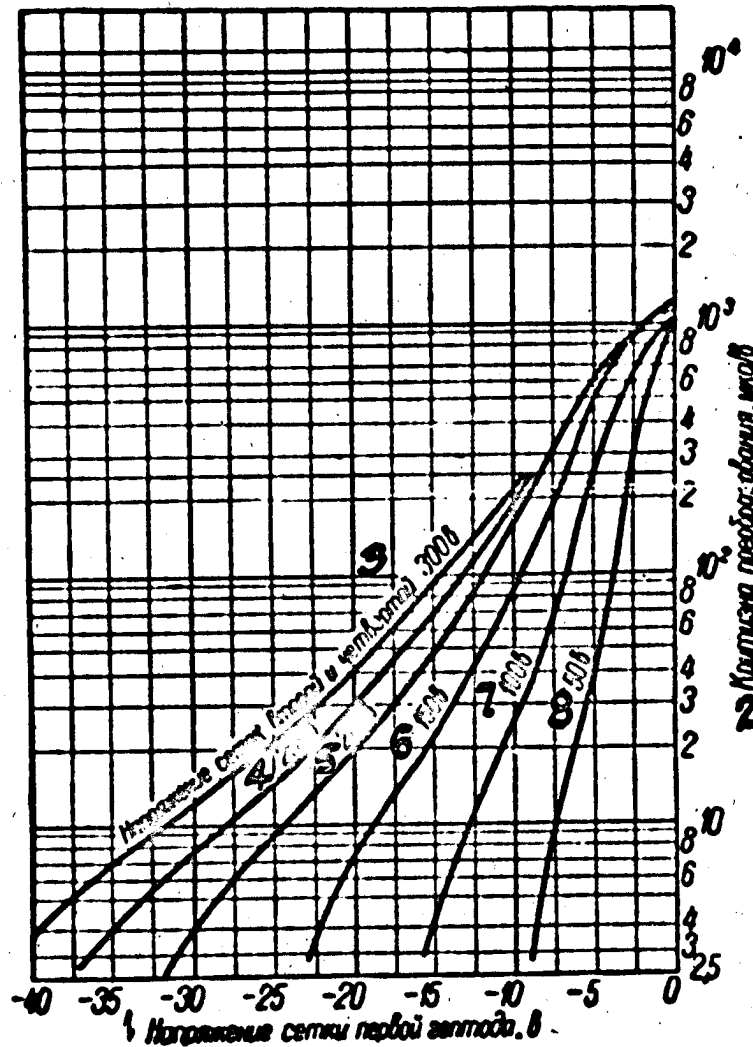
(Above material published April 1959, PKB, G-7)

TRIODE-HEPTODE, COMMON CATHODE

6I1P

Average Dynamic Conversion-Transconductance Curves as Functions of Heptode First-Grid Voltage

Heater voltage, 6.3 v; heptode plate voltage, 250 v; triode plate voltage, 100 v; third-grid voltage, 0 v; alternating voltage on heptode third grid and triode grid, 8.5 v (eff); resistance in heptode third-grid circuit and triode grid circuit, 47 kohm.



- 1) Heptode first-grid voltage, v; 2) conversion transconductance, $\mu\text{A/V}$; 3) second- and fourth-grid voltage, 300 v; 4) 250 v; 5) 200 v; 6) 150 v; 7) 100 v; 8) 50 v.

(Above material published April 1959, PKB, G-3)

VIBRATION-RESISTANT TRIODE-HEPTODE
WITH COMMON CATHODE

6I1P-V

Maximum Heptode plate power dissipation	1.7 watts
Maximum heptode second- and fourth-grid power dissipation	1 watt
Maximum heptode cathode current	12.5 ma
Maximum voltage between cathode and heater (=)	200 v
Maximum resistance in heptode first-grid circuit	1 megohm

Resistance to External Effects

Maximum ambient temperature	200°C
Minimum atmospheric pressure	5 mm Hg
Maximum acceleration in the presence of extended vibration (up to 100 hours)*	6 g
Maximum acceleration for individual shocks	500 g

*At frequency of 50 cps.

Standard Conversion Operating Conditions

Triode plate voltage (=)	100 v
Alternating voltage on triode grid connected to heptode third grid	8.5 v (eff)
Resistance in triode grid circuit, grid connected with third grid of heptode	47 kohm
Triode grid current, grid connected with heptode third grid	200 µa
Heptode plate voltage (=)	250 v
Heptode second- and fourth-grid voltage (=)	100 v
Heptode first-grid voltage (=)	-2 v
Heptode plate current	3.3 ma
Heptode second- and fourth-grid currents	6.0 ma
Conversion transconductance	0.75 ma/v
Conversion transconductance at beginning of curve*	no less than 5 µa/v

*With first-grid voltage of -12 v.

Preliminary data.

(Above material published April 1959, PKB, Sheet 2)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K1Zh

Basic function radio frequency voltage amplification.Construction glass, "acorn" type.General Data

Cathode — oxide-coated heater-type

Maximum height

47.6 mm

Maximum diameter

29.4 mm

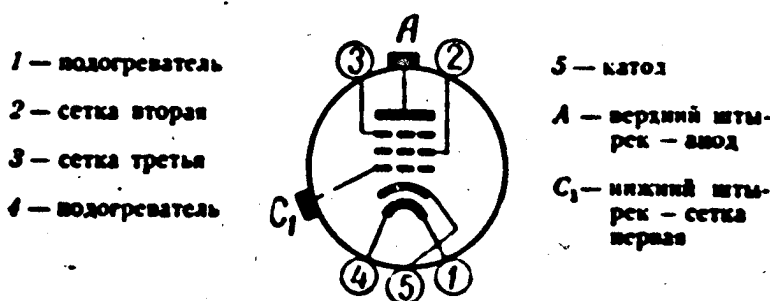
Maximum weight

15 grams

Number of pins

7

Dimension drawing — 2Zh

Connection Diagram for Electrodes and Pins

1) Heater; 2) screen; 3) suppressor; 4) heater; 5) cathode; A) top pin — plate; C₁) lower pin — control grid.

Electrical Data

Heater voltage (~ or =)

6.3 v

Heater current

150 ± 10 ma

Plate voltage (=)

250 v

Suppressor voltage (=)

0 v

Screen voltage (=)

100 v

Control-grid voltage (=)

-3 v

Plate current

6.65 ± 2.25 ma

Screen current

2.7 ± 1.3 ma

Transconductance

1.85 ± 0.55 ma/v

Transconductance for heater voltage of 5.5 v

no less than 1.1 ma/v

Transconductance for first-grid voltage of -35 v

from 2 to 50 µa/v

Internal resistance

no less than 0.45 megohm

First-grid back current

no more than 1 µa

(Above material published April 1959, PKB, Sheet 1)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K1Zh

Cathode emission current*	no less than 20 ma
First-grid insulation resistance	no more than 20 megohm
Plate insulation resistance	no less than 20 megohm
Grid-plate** insulation resistance	no less than 17 kohm
Service life	250 hours
Service-life criterion: transconductance	no less than 1.2 ma/v

*For plate and grid voltages of 15 v.

**At frequency of 200 Mc with cold cathode.

Interelectrode Capacitances

Input	$3 \pm 1 \mu\text{f}$
Output	$3 \pm 1 \mu\text{f}$
Transfer	no more than 0.009 μf

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	6.9 v
Minimum heater voltage ($\sim$ or $=$)	5.7 v
Maximum plate voltage ($=$)	275 v
Maximum screen voltage ($=$)	100 v
Maximum first-grid voltage ($=$)	-3 v
Maximum plate power dissipation	1.8 watts
Maximum screen power dissipation	0.33 watt
Maximum voltage between cathode and heater ($=$)	90 v

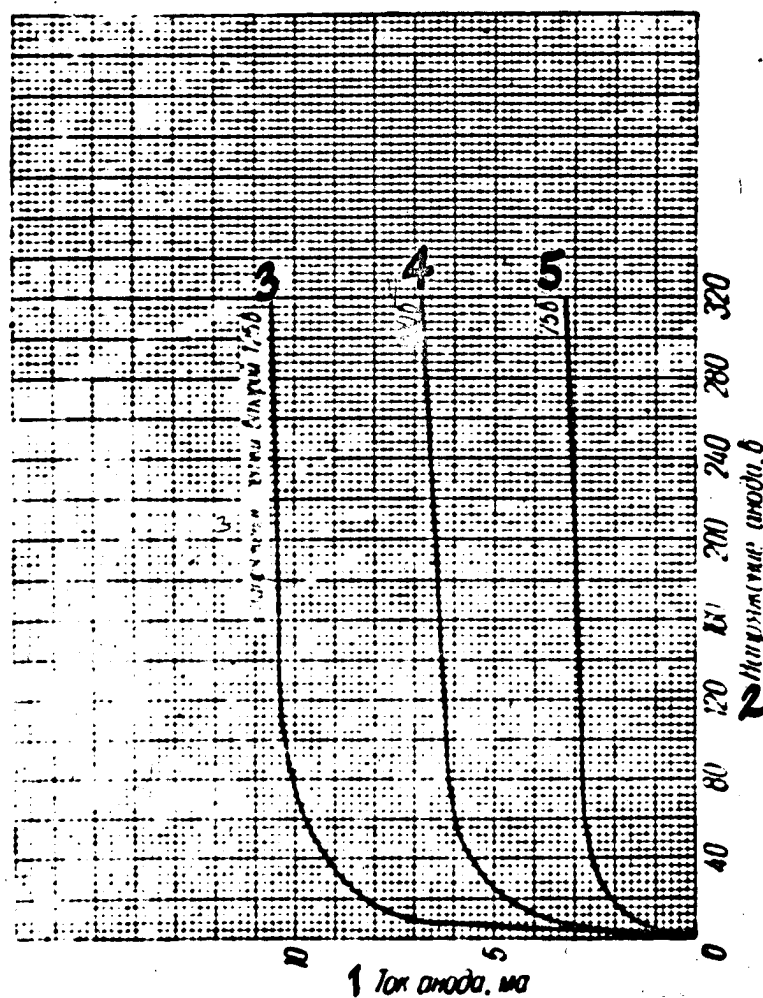
(Above material published April 1959, PKB, Sheet 1)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K1Zh

Average Plate Curves

Heater voltage, 6.3 v; first-grid voltage, -3 v.



1) Plate current, ma; 2) plate voltage, v; 3) screen voltage, 125 v;
 4) 100 v; 5) 75 v.

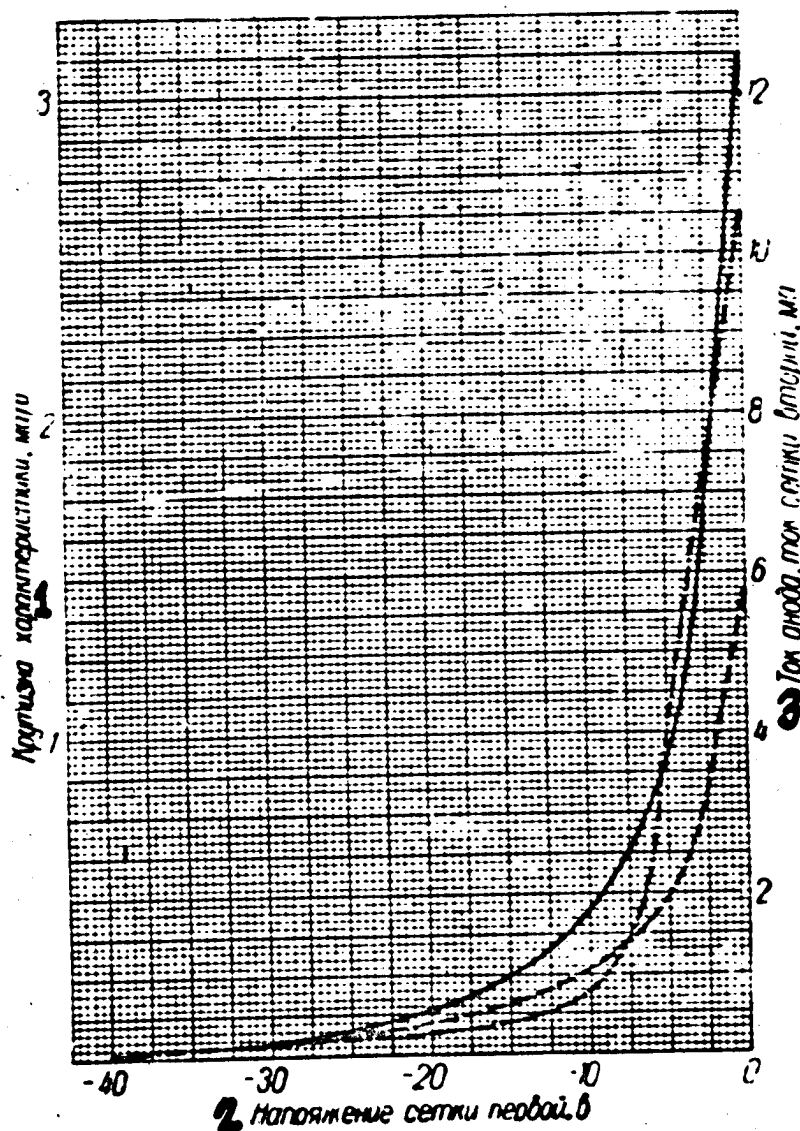
(Above material published April 1959, PKB, G-1)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K1Zh

Average Characteristics

———— Plate-grid; ----- grid (for screen grid); - - - - - transconductance; heater voltage, 6.3 v; plate voltage, 250 v; screen voltage, 100 v.



1) Transconductance, ma/v; 2) first-grid voltage, v; 3) plate current, screen current, ma.

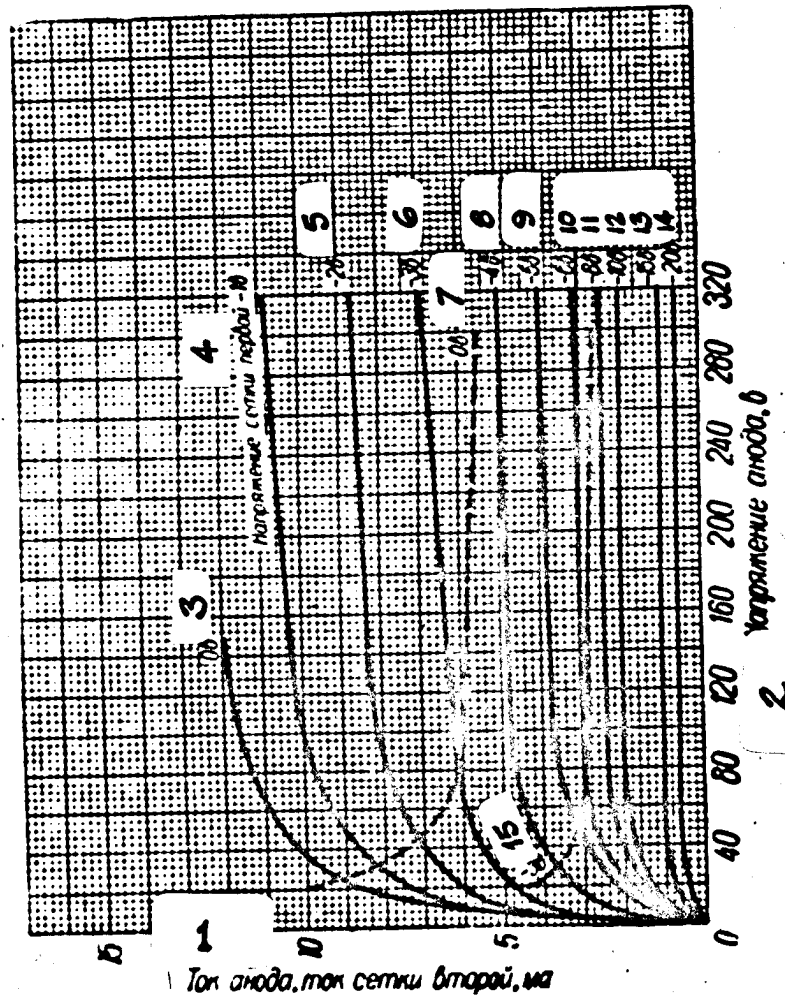
(Above material published April 1959, PKB, G-3)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K1Zh

Average Characteristics

———— Plate; ----- grid-plate (for screen grid); heater voltage, 6.3 v; screen voltage, 100 v.



- 1) Plate current, screen current, ma; 2) plate voltage, v; 3) 0 v;
 4) first-grid voltage, -1 v; 5) -2 v; 6) -3 v; 7) 0 v; 8) -4 v;
 9) -5 v; 10) -6 v; 11) -8 v; 12) -10 v; 13) -15 v; 14) -20 v;
 15) -3 v.

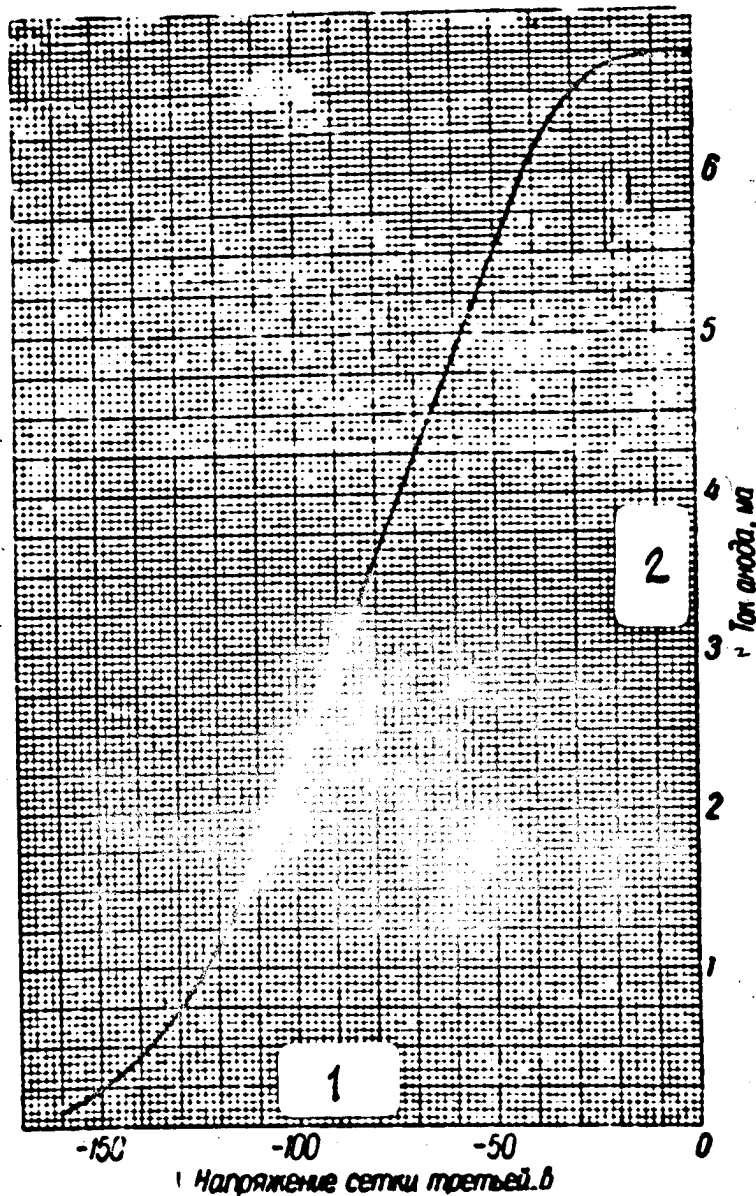
(Above material published April 1959, PKB, G-2)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K1Zh

Average Plate-grid Curve

Heater voltage, 6.3 v; plate voltage, 250 v; first-grid voltage, -3 v; screen voltage, 100 v.



1) Suppressor voltage, v; 2) plate current, ma.

(Above material published April 1959, PKB, G-4)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K1P

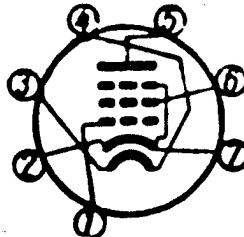
Basic Function radio-frequency voltage amplification.Construction glass miniature.General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Maximum weight
 Number of pins
 Dimension drawing — 1P

46 mm
 19 mm
 12 grams
 7

Connection Diagram for Electrodes and Pins

1 — сетка первая
 2 — катод
 3 — подогреватель
 4 — подогреватель



5 — анод
 6 — сетка вторая
 7 — катод и сетка третья

1) First grid; 2) cathode; 3) heater; 4) heater; 5) plate; 6) screen;
 7) cathode and suppressor.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	150 ± 10 ma
Plate voltage (=)	250 v
Screen voltage (=)	100 v
First-grid voltage (=)	-3 v
Plate current	6.65 ± 2.25 ma
Screen current	2.7 ± 1.3 ma
Transconductance	1.85 ± 0.55 ma/v
Transconductance for heater voltage of 5.7 v	no less than 1.1 ma/v
Transconductance for first-grid voltage of -35 v	from 2 to 50 µa/v
Internal resistance	no less than 0.45 megohm
First-grid back current	no more than 1 µa
Leakage current between cathode and heater	no more than 20 µa
Cathode emission current	no less than 20 ma
Cathode warm-up time	no more than 20 sec

(Above material published April 1959, PKB, Sheet 1)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K1P

First-grid insulation resistance	no less than 20 megohm
Plate insulation resistance	no less than 20 megohm
Insulation resistance between plate and cathode*	no less than 22 kohm
Service life	500 hours
Service-life criterion: transconductance	no less than 1.2 ma/v

*At frequency of 20 Mc, with cold cathode.

Interelectrode Capacitances

Input	$3.4 \pm 0.7 \mu\text{f}$
Output	$3.0 \pm 0.9 \mu\text{f}$
Transfer	no more than $0.01 \mu\text{f}$

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	6.9 v
Minimum heater voltage ($\sim$ or $=$)	5.7 v
Maximum plate voltage ($=$)	275 v
Maximum screen voltage ($=$)	110 v
Maximum plate power dissipation	1.8 watts
Maximum screen power dissipation	0.33 watt
Maximum voltage between cathode and heater ($=$)	90 v

Note: Characteristics the same as for 6K1Zh (G-1, G-2, G-3).

(Above material published April 1959, PKB, Sheet 1)

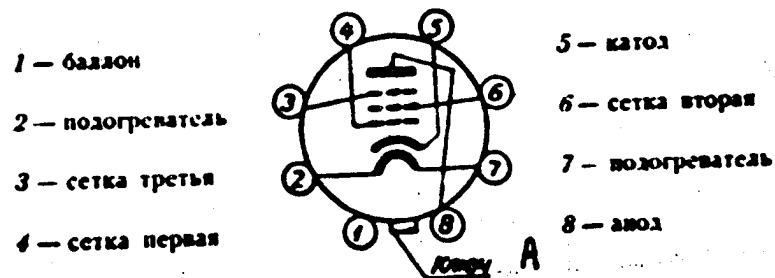
REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K3

Basic function radio-frequency voltage amplification.Construction metal.General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Maximum weight
 Base — octal, Tsl-1-8A
 Dimension drawing — 1M

67 mm
 33 mm
 45 grams

Connection Diagram for Electrodes and Pins

1) Envelope; 2) heater; 3) suppressor; 4) first grid; 5) cathode;
 6) screen 7) heater; 8) plate; A) Key.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	300 ± 25 ma
Plate voltage (=)	250 v
Suppressor voltage (=)	0 v
Screen voltage (=)	100 v
First-grid voltage (=)	-3 v
Plate current	9.25 ± 2.75 ma
Screen current	2.5 ± 0.9 ma
Transconductance	2.0 ± 0.4 ma/v
Transconductance for heater voltage of 5.7 v	no less than 1.3 ma/v
Transconductance for first-grid voltage of -35 v	from 1 to 30 μa/v
First-grid back current	no more than 1.0 μa
Cathode emission current*	no less than 65 ma

*For plate and grid voltages of 30 v.

(Above material published April 1959, PKB, Sheet 1)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K3

Leakage current between cathode and heater	no more than 20 μ a
Cathode warm-up time	no more than 20 sec
First-grid insulation resistance	no less than 20 megohm
Plate insulation resistance	no less than 20 megohm
Service life	500 hours
Service-life criterion: transconductance	no less than 1.3 ma/v

Interelectrode Capacitances

Input	$6 \pm 1.2 \mu\text{mf}$
Output	$7 \pm 1.8 \mu\text{mf}$
Transfer	no more than 0.003 μmf

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	6.9 v
Minimum heater voltage ($\sim$ or $=$)	5.7 v
Maximum plate voltage ($=$)	330 v
Maximum screen voltage ($=$)	140 v
Maximum plate power dissipation	4.4 watts
Maximum screen power dissipation	0.44 watt
Maximum voltage between cathode and heater ($=$)	100 v

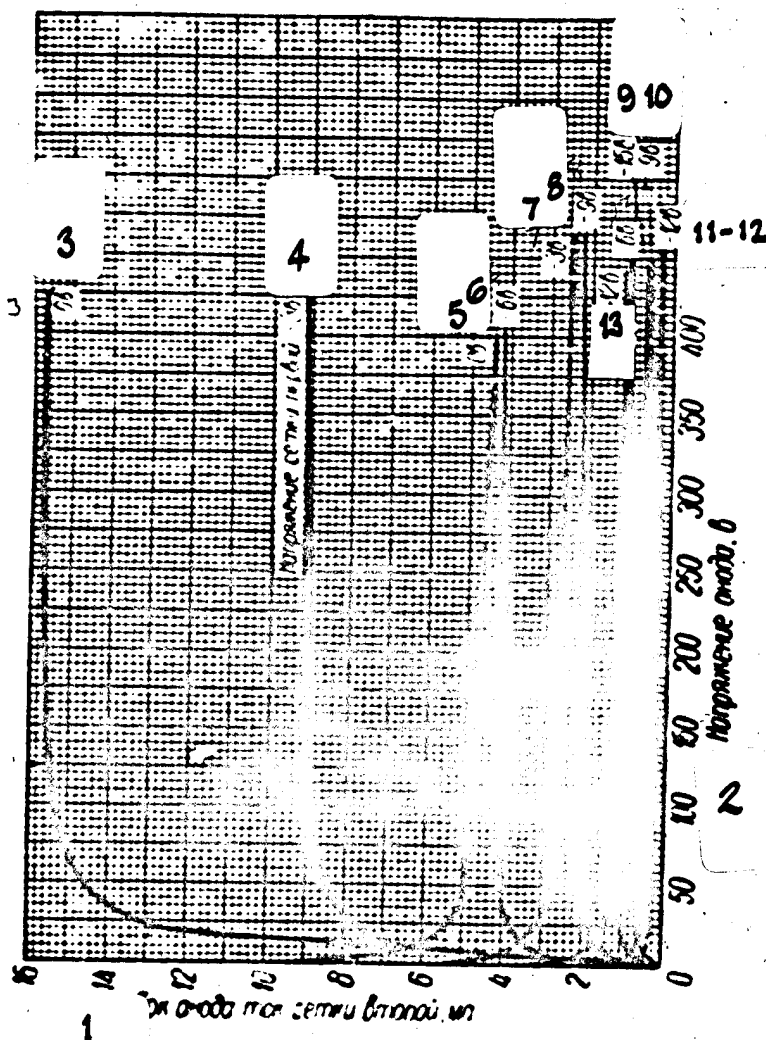
(Above material published April 1959, PKB, Sheet 1)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K3

Average Characteristics

— Plate; ----- grid-plate (for screen grid); heater voltage, 6.3 v; screen voltage, 100 v; suppressor voltage, 0 v.



- 1) Plate current, screen current, ma; 2) plate voltage, v; 3) 0 v;
 4) first-grid voltage, -3 v; 5) 0 v; 6) -6 v; 7) -3 v; 8) -9 v;
 9) -15 v; 10) -9 v; 11) -12 v; 12) -6 v; 13) -12 v.

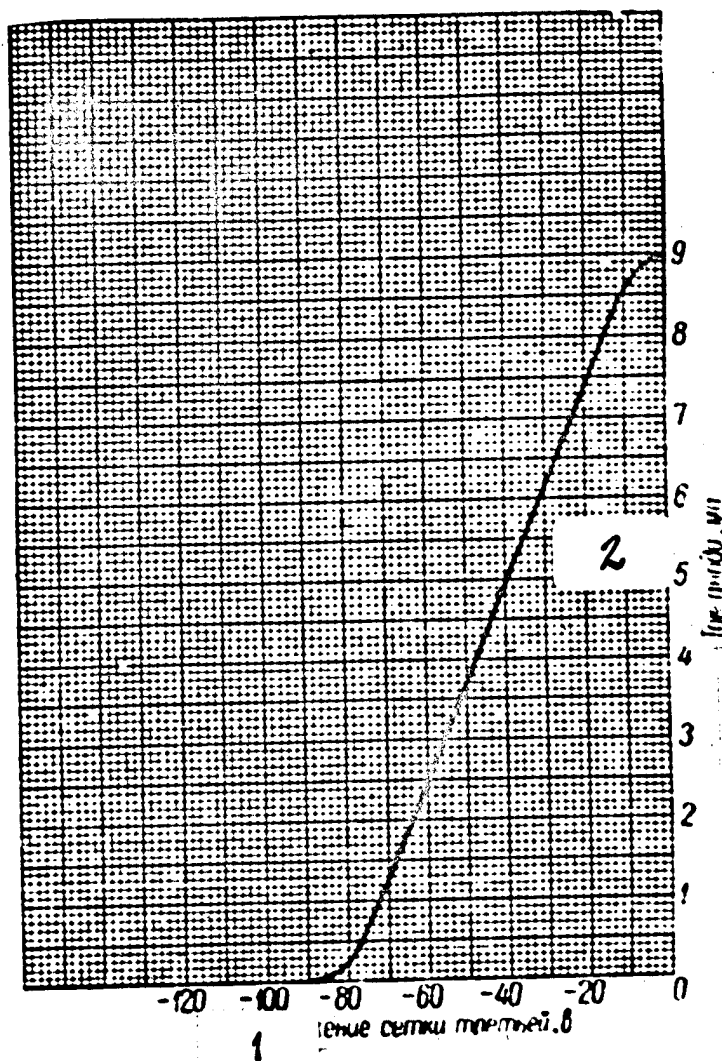
(Above material published April 1959, PKB, G-1)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K3

Average Plate-Current Curve

Heater voltage, 6.3 v; plate voltage, 250 v; screen voltage, 100 v; first-grid voltage, -3 v.



1) Suppressor voltage, v; 2) plate current, ma.

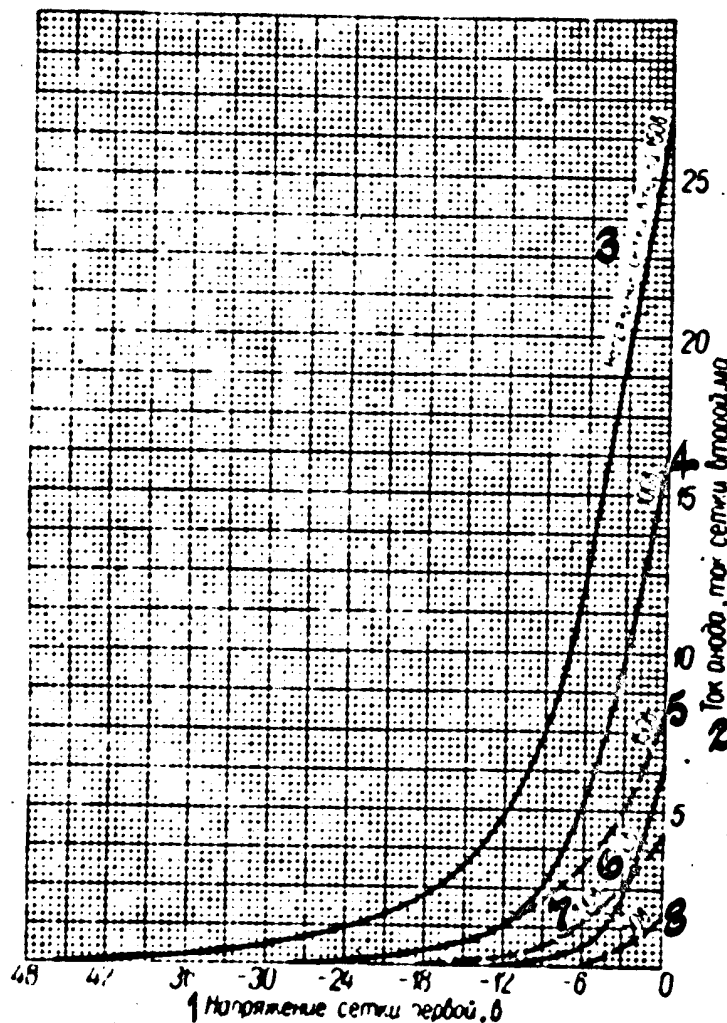
(Above material published April 1959, PKB, G-3)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K3

Average Characteristics

— Plate-grid; ----- grid (for screen grid); heater voltage, 6.3 v; plate voltage, 250 v; suppressor voltage, 0 v.



- 1) First-grid voltage, v; 2) plate current, screen current, ma;
 3) screen voltage, 150 v; 4) 100 v; 5) 150 v; 6) 50 v; 7) 100 v;
 8) 50 v.

(Above material published April 1959, PKB, G-2)

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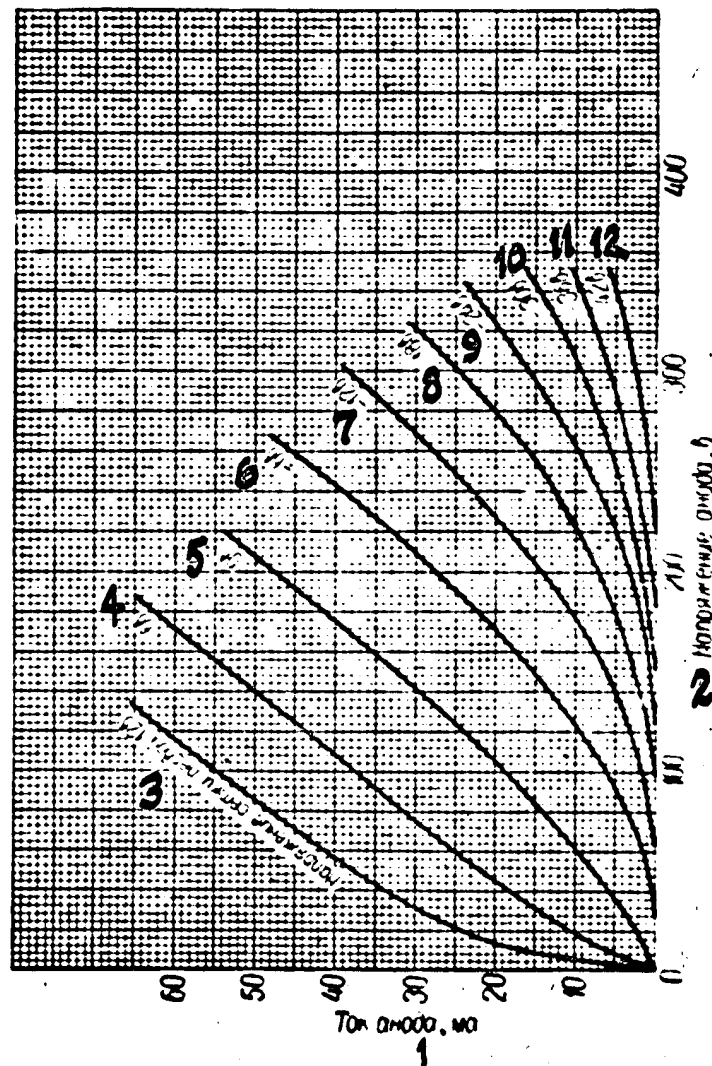
REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K3

Average Plate Curves

(triode connection: suppressor connected to plate)

Heater voltage, 6.3 v.



- 1) Plate current, ma; 2) plate voltage, v; 3) first-grid voltage, 12 v;
 4) 6 v; 5) 0 v; 6) -6 v; 7) -12 v; 8) -18 v; 9) -24 v; 10) -30 v;
 11) -36 v; 12) -42 v.

(Above material published April 1959, PKB, G-4)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K4

Basic function radio-frequency voltage amplification.Construction metalGeneral Data

Cathode — oxide-coated heater-type

Maximum height

67 mm

Maximum diameter

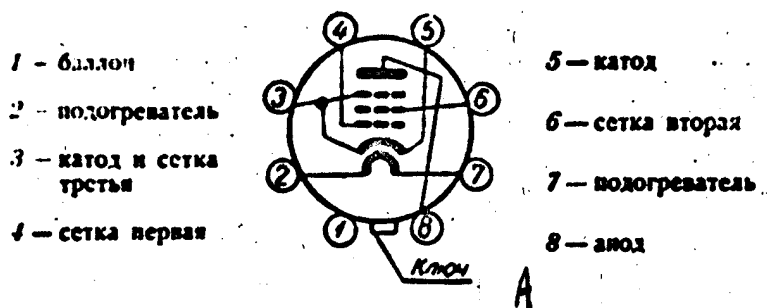
33 mm

Maximum weight

45 grams

Base — octal, Ts1-1-8A

Dimension drawing — 1M

Connection Diagram for Electrodes and Pins

- 1) Envelope; 2) heater; 3) cathode and suppressor; 4) first grid;
5) cathode; 6) screen; 7) heater; 8) plate; A) Key.

Electrical DataHeater voltage ($\sim$ or $=$)

6.3 v

Heater current

 300 ± 25 maPlate voltage ($=$)

250 v

Screen voltage ($=$)

125 v

First-grid voltage ($=$)

-1 v

Plate current

 11.8 ± 2.8 ma

Screen current

 4.4 ± 1.5 ma

Transconductance

 4.7 ± 0.9 ma/v

Transconductance for heater voltage of

5.7 v

no less than 3 ma/v

Transconductance for first-grid voltage

of -14 v

from 10 to 100 μ a/v

First-grid back current*

no more than 1.0 μ a

*For first-grid voltage of -1.5 v.

(Above material published April 1959, PKB, Sheet 1)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K4

Leakage current between cathode and heater no more than 20 μ a
 Cathode warm-up time no more than 20 sec
 First-grid insulation resistance no less than 20 megohm
 Plate insulation resistance no less than 20 megohm
 Service life no less than 500 hours
 Service-life criterion:
 transconductance no less than 3.1 ma/v

Interelectrode Capacitances

Input 8.5 $\pm$ 1.7 μ f
 Output 7 $\pm$ 2.1 μ f
 Transfer no more than 0.005 μ f

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$) 6.9 v
 Minimum heater voltage ($\sim$ or $=$) 5.7 v
 Maximum plate voltage ($=$) 330 v
 Maximum screen voltage ($=$) 220 v
 Maximum plate power dissipation 3.3 watts
 Maximum screen power dissipation 0.7 watt
 Maximum voltage between cathode and heater ($=$) 100 v

Standard Operating Conditions

as Class A Amplifier

	No. 1	No. 2
Plate voltage ($=$), v	100	250
First-grid voltage ($=$), v	-1	-1
First-grid voltage for transconductance of 0.04 ma/v, v	-11.5	-14
Screen voltage, ($=$) v	100	125
Plate current, ma	8.2	11.8
Screen current, ma	3.2	4.4
Transconductance, ma/v	4.1	4.7
Internal resistance, megohm	0.25	0.9

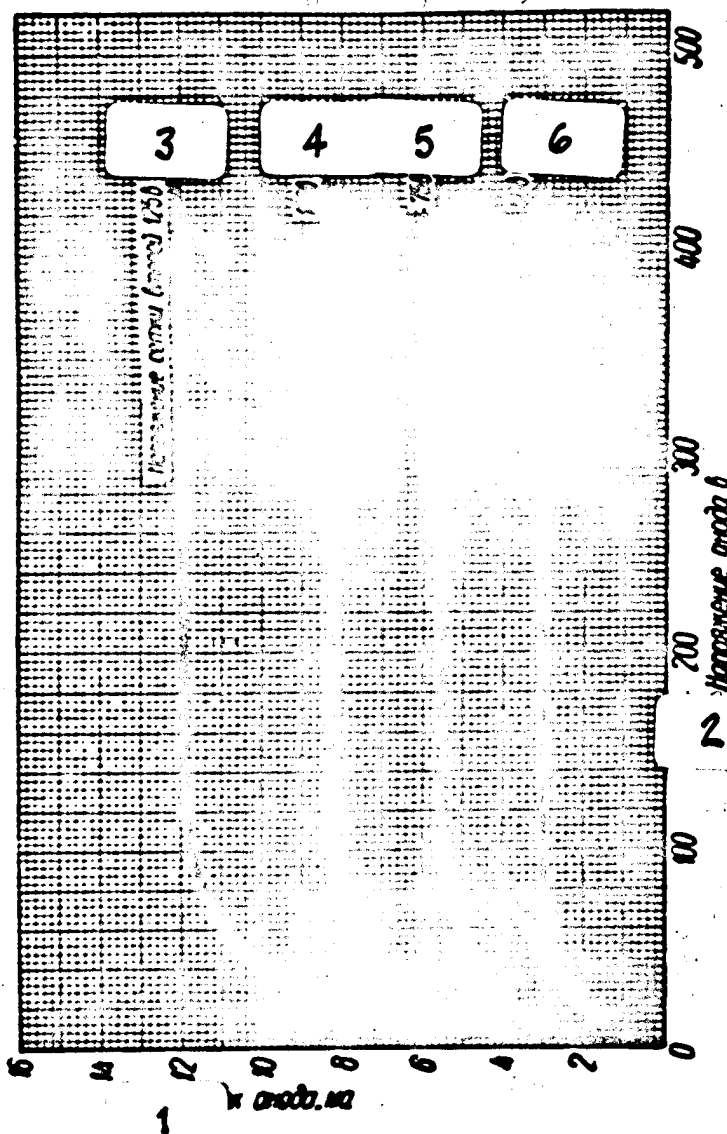
(Above material published April 1959, PKB, Sheet 1)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K4

Average Plate Curves

Heater voltage, 6.3 v; first-grid voltage, -1 v.



- 1) Plate current, ma; 2) plate voltage, v; 3) screen voltage, 125 v;
 4) 100 v; 5) 75 v; 6) 50 v.

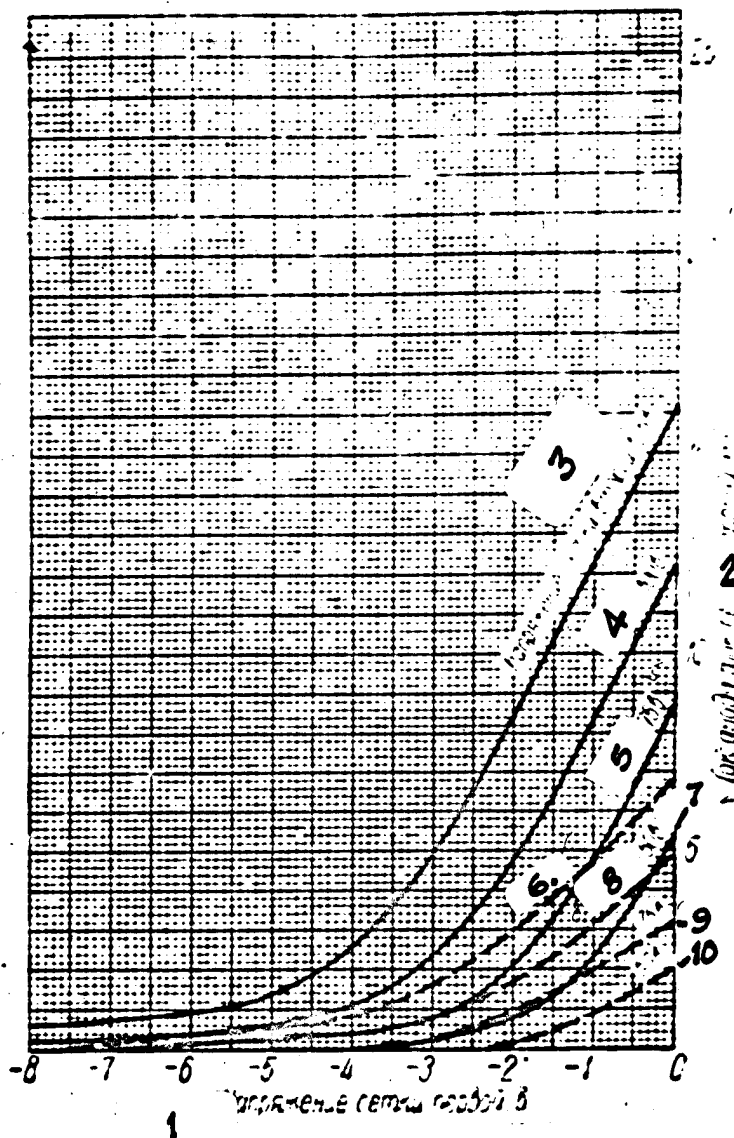
(Above material published April 1959, PKB, G-1)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K4

Average Characteristics

———— Plate-grid; ----- grid (for screen grid); heater voltage, 6.3 v; plate voltage, 250 v; suppressor voltage, 0 v.



- 1) First-grid voltage, v; 2) plate current, screen current, ma;
 3) screen voltage, 125 v; 4) 100 v; 5) 75 v; 6) 125 v; 7) 50 v;
 8) 100 v; 9) 75 v; 10) 50 v.

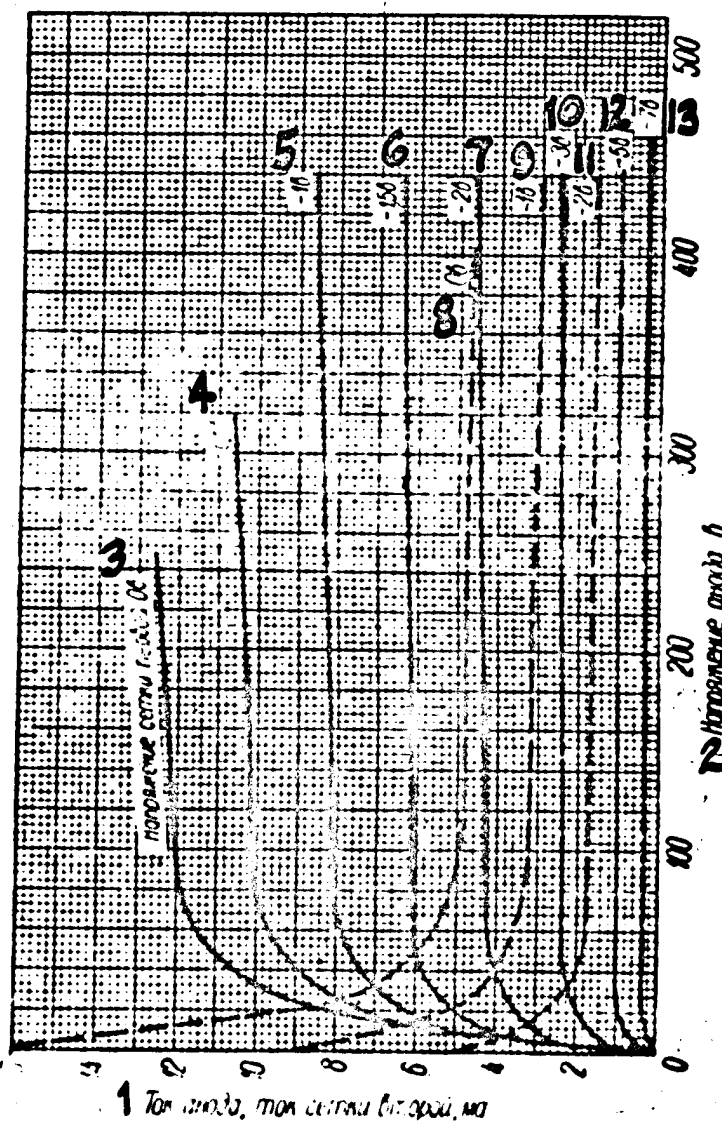
(Above material published April 1959, PKB, G-3)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K4

Average Characteristics

— Plate; ----- grid-plate (for screen grid); heater voltage, 6.3 v; screen voltage, 100 v; suppressor voltage, 0 v.



1) Plate current, screen current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) -2 v; 8) 0 v; 9) -1 v; 10) -3 v; 11) -2 v; 12) -5 v; 13) -7 v.

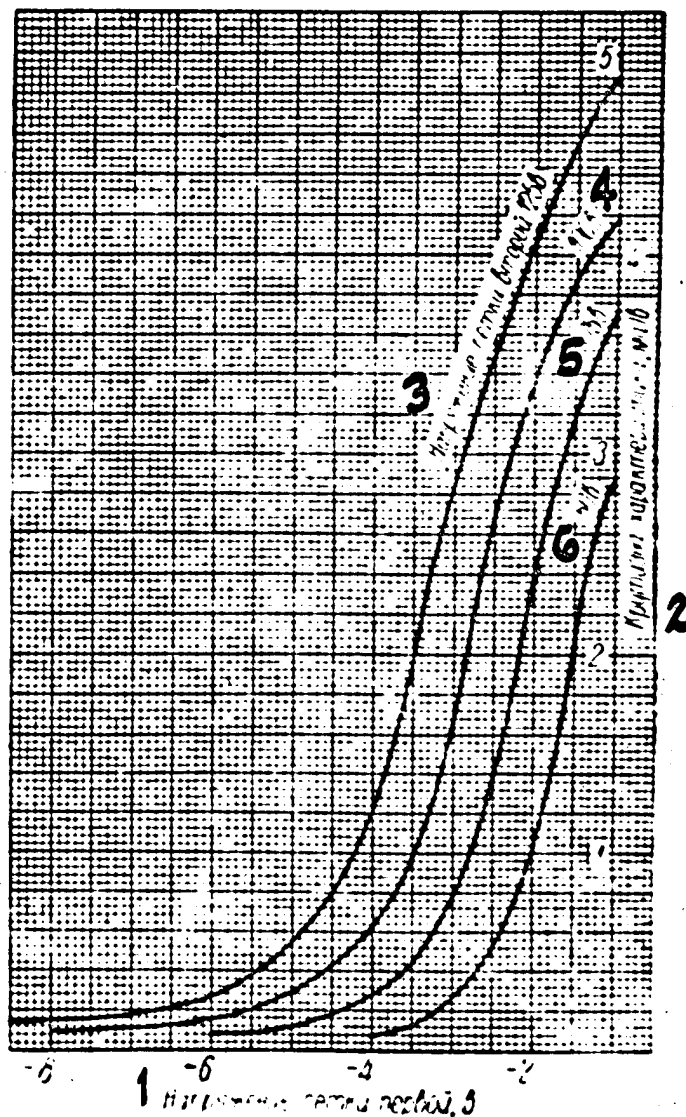
(Above material published April 1959, PKB, G-2)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K4

Average Curves for Mutual Conductance as a Function of First-Grid Voltage

Heater voltage, 6.3 v; plate voltage 250 v.



1) First-grid voltage, v; 2) mutual conductance, ma/v; 3) screen voltage, 125 v; 4) 100 v; 5) 75 v; 6) 50 v.

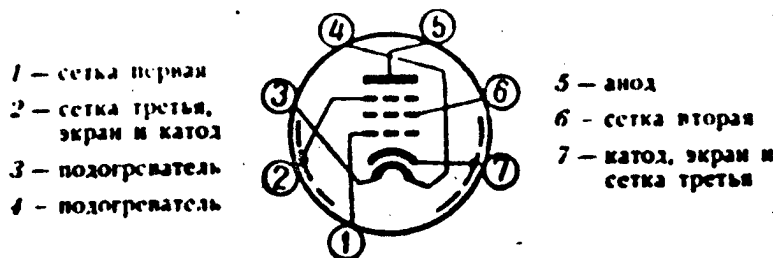
(Above material published April 1959, PKB, G-4)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE. 6K4P

Basic function radio-frequency voltage amplification.Construction glass miniature.General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Maximum weight
 Number of pins
 Dimension drawing — 7P

62 mm
 19 mm
 13 grams
 7

Connection Diagram for Electrodes and Pins

1) First grid; 2) suppressor, shield, and cathode; 3) heater;
 4) heater; 5) plate; 6) screen; 7) cathode, shield, and suppressor.

Electrical Data

Heater voltage ($\sim$ or $=$)	6.3 v	
Heater current	300 ± 25 ma	
Plate voltage ($=$)	250 v	
Screen voltage ($=$)	100 v	
Resistance in cathode circuit, self biasing	68 ohms	
Plate current	$10 + 3.3$ ma	←
Screen current	3.7 ± 1.3 ma	←
Transconductance	4.4 ± 0.9 ma/v	←
Transconductance for heater voltage of 5.7 v	no less than 3 ma/v	
Transconductance for first-grid voltage of -20 v	40 μ a/v	
Internal resistance	no less than 0.45 megohm	←
Input resistance*	19 kohm	
First-grid back current	no more than 0.5 μ a	←

*For first-grid voltage of -1 v and frequency of 60 Mc.

← Change introduced.

(Above material published April 1959, PKB, Sheet 1)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K4P

Leakage current between cathode and heater no more than 20 μ a
 Service life 1000 hours ←

Service-life criterion:
 transconductance no less than 2.8 ma/v

Interelectrode Capacitances ←

Input 6.4 μ f
 Output 6.7 μ f
 Transfer no more than 0.0045 μ f

Maximum Permissible Operating Data

Maximum heater voltage { ~ or = } 7 v
 Minimum heater voltage { ~ or = } 5.7 v
 Maximum plate voltage (=) 300 v
 Maximum screen voltage (=) 125 v
 Maximum voltage between cathode and heater 90 v
 Maximum cathode current 20 ma
 Maximum plate power dissipation 3 watts
 Maximum screen power dissipation 0.6 watt
 Maximum resistance in first-grid circuit 0.5 megohm

← Change introduced.

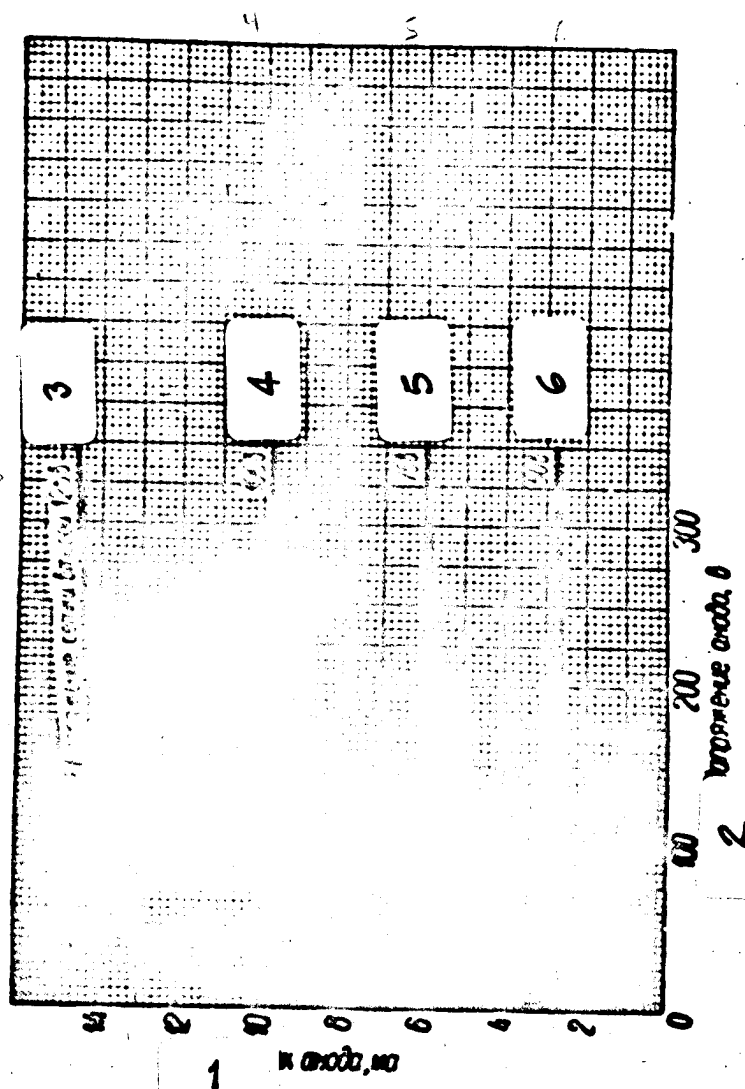
(Above material published April 1959, PKB, Sheet 1)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K4P

Average Plate Curves

Heater voltage, 6.3 v; first-grid voltage, -1 v.



- 1) Plate current, ma; 2) plate voltage, v; 3) screen voltage, 125 v;
 4) 100 v; 5) 75 v; 6) 50 v.

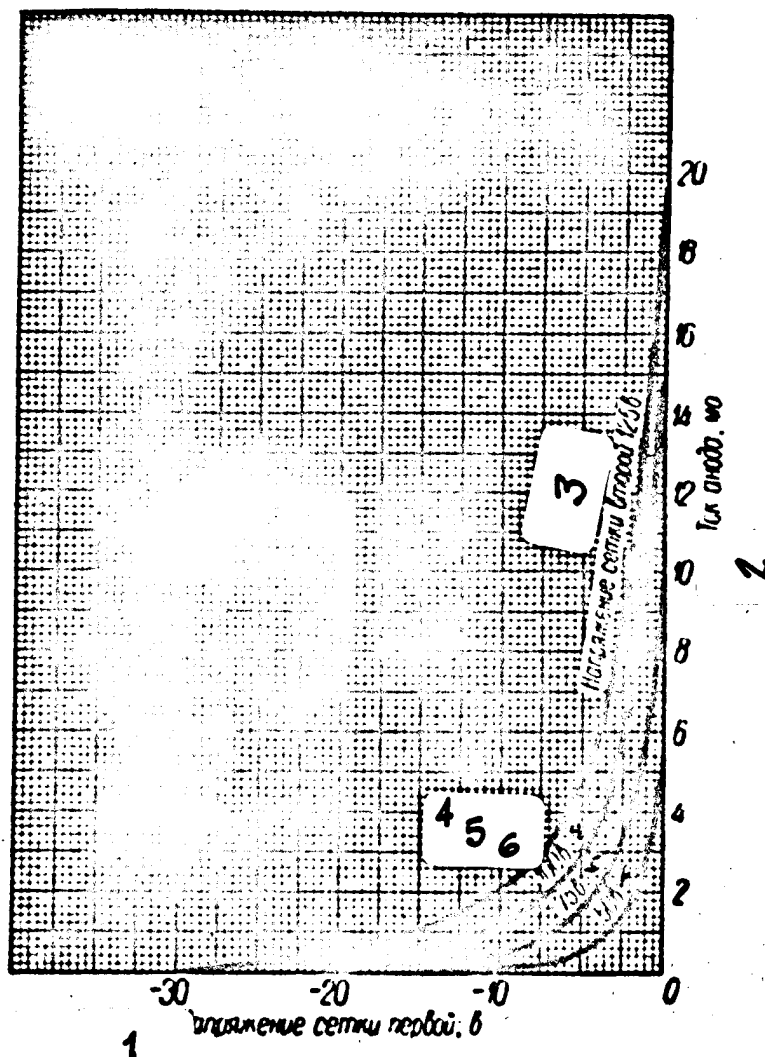
(Above material published April 1959, PKB, G-1)

REMOTE-CONTROL RADIO-FREQUENCY PENTODE

6K4P

Average Plate-Grid Curves

Heater voltage, 6.3 v; plate voltage, 250 v.



1) First-grid voltage, v; 2) plate current, ma; 3) second-grid voltage, 125 v; 4) 100 v; 5) 75 v; 6) 50 v.

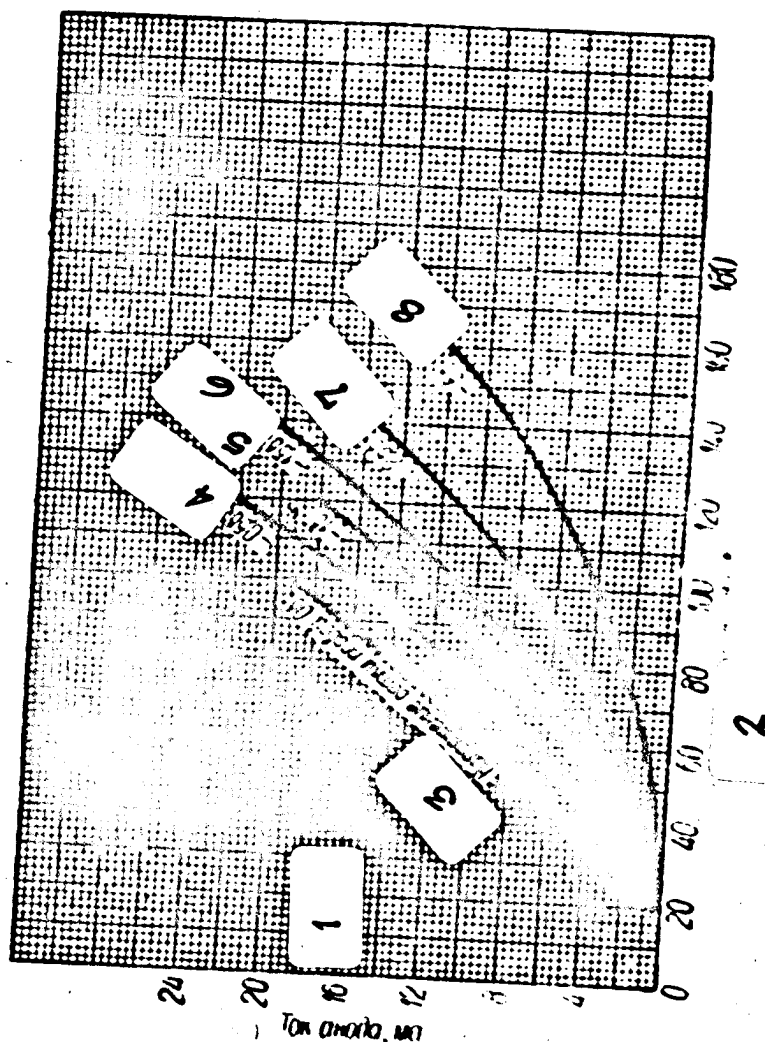
(Above material published April 1959, PKB, G-3)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE 6K4P

Average Plate Curves

(triode connection: screen connected to plate)

Heater voltage, 6.3 v.



1) Plate current, ma; 2) [illegible in original]; 3) first-grid voltage, 0 v; 4) -0.5 v; 5) -1 v; 6) -1.5 v; 7) -2.5 v; 8) -5 v.

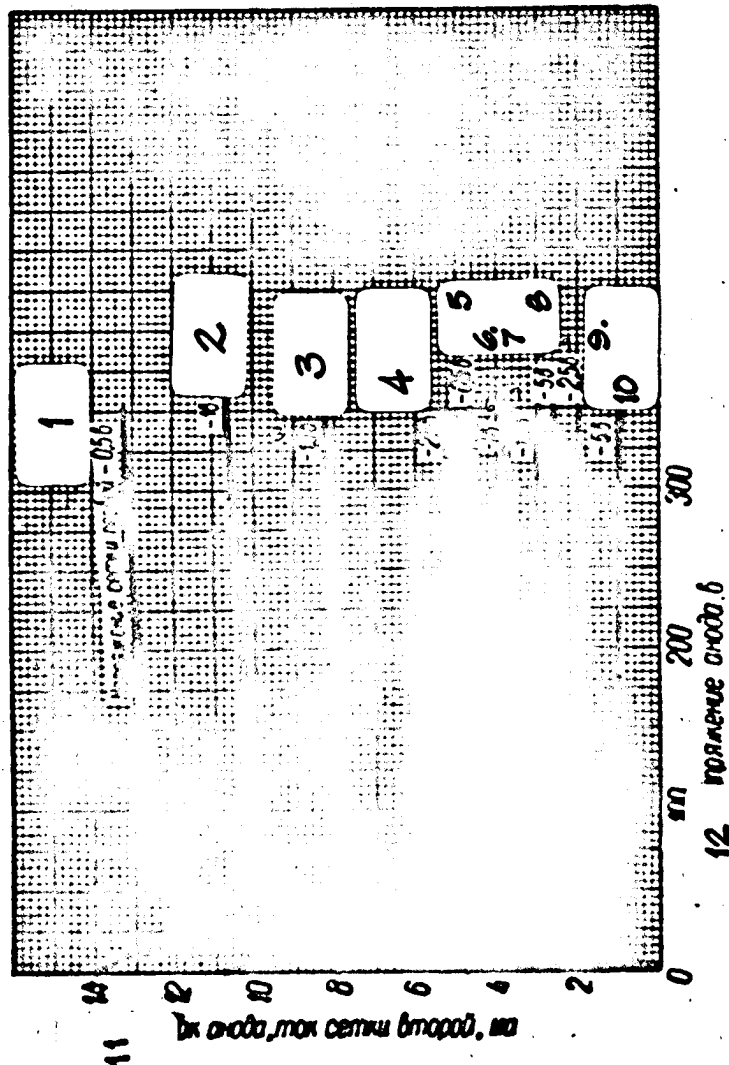
(Above material published April 1959, PKB, G-5)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K4P

Average Characteristics

———— Plate; ----- grid-plate (for screen grid); heater voltage, 6.3 v; screen voltage, 100 v.



1) First-grid voltage, -0.5 v; 2) -1 v; 3) -1.5 v; 4) -2.5 v; 5) -0.5 v; 6) -1 v; 7) -1.5 v; 8) -5 v; 9) -2.5 v; 10) -5 v; 11) plate current, screen current, ma; 12) plate voltage, v.

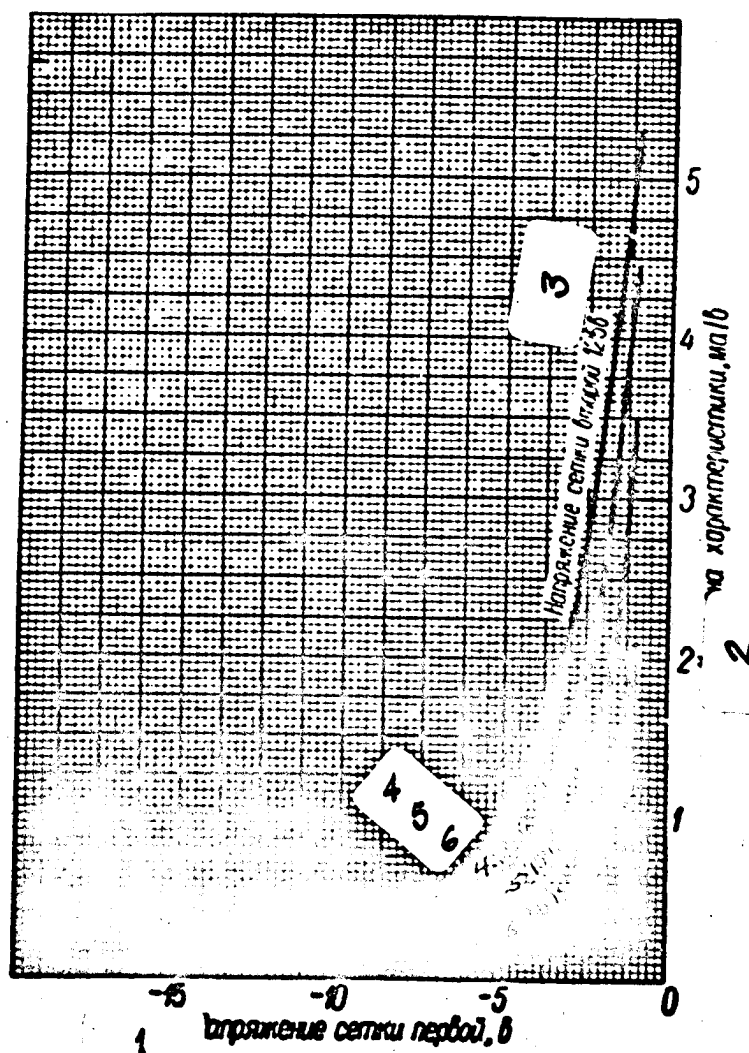
(Above material published April 1959, PKB, G-2)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K4P

Average Curves Showing Dependence of Mutual Conductance Upon First-Grid Voltage

Heater voltage, 6.3 v; plate voltage, 250 v.



1) First-grid voltage, v; 2) mutual conductance, ma/v; 3) screen voltage, 125 v; 4) 100 v; 5) 75 v; 6) 50 v.

(Above material published April 1959, PKB, G-4)

INCREASED-RELIABILITY REMOTE-CUTOFF
RADIO-FREQUENCY PENTODE

6K4P-V

Basic function radio-frequency voltage amplification.

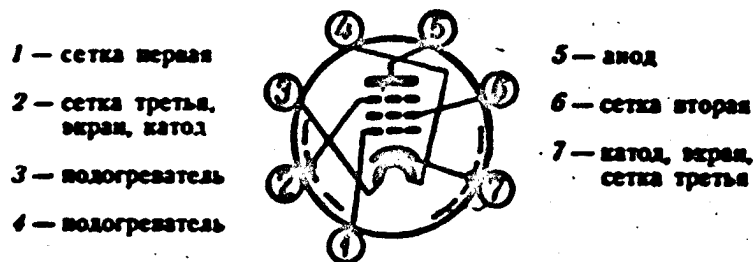
Construction glass miniature.

General Data

Cathode — oxide-coated heater-type
Maximum height
Maximum diameter
Maximum weight
Number of pins
Dimension drawing — 7P

62 mm
19 mm
13 grams
7

Connection Diagram for Electrodes and Pins



1) Control grid; 2) suppressor, shield, cathode; 3) heater; 4) heater;
5) plate; 6) screen; 7) cathode, screen, suppressor.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	300 ± 25 ma
Plate voltage (=)	250 v
Screen voltage (=)	100 v
Resistance in cathode circuit, self biasing	68 ohms
Plate current	10 + 3 ma
Screen current	no more than 5.5 ma
Transconductance	4.4 ± 0.9 ma/v
Transconductance for heater voltage of 5.7 v	no less than 3 ma/v
Transconductance for first-grid voltage of -20 v	40 μa/v
Internal resistance	0.85 megohm
Input resistance at frequency of 60 Mc	5.0 kohm
Equivalent internal noise resistance	3.5 kohm

←Change introduced.

(Above material published April 1959, PKB, Sheet 1)

INCREASED-RELIABILITY REMOTE-CUTOFF
RADIO-FREQUENCY PENTODE

6K4P-V

First-grid back current	no more than 0.5 μ a
Leakage current between cathode and heater	20 μ a
Service life	500 hours
Service-life criteria:	
transconductance	no less than 2.8 ma/v
first-grid back current	no more than 2 μ a

Interelectrode Capacitances

Input	6 μ f
Output	6.3 μ f
Transfer	0.0035 μ f

Maximum Permissible Operating Data

Maximum heater voltage { ~ or = }	7 v
Minimum heater voltage { ~ or = }	5.7 v
Maximum plate voltage (=)	300 v
Maximum screen voltage (=)	125 v
Maximum plate voltage with tube cut off (plate current not exceeding 5 μ a)	340 v
Maximum screen voltage with tube cut off (plate current no exceeding 5 μ a)	310 v
Maximum plate power dissipation	3 watts
Maximum screen power dissipation	0.6 watt
Maximum cathode current	20 ma
Maximum voltage between cathode and heater	90 v
Minimum resistance in cathode circuit, self biasing	68 ohms
Maximum resistance in first-grid circuit	0.5 megohm
Maximum envelope temperature	120°C

Resistance to External Effects

Minimum atmospheric pressure	20 mm Hg
Maximum centrifugal acceleration	100 g
Maximum acceleration:*	
for brief period of vibration	10 g
for extended period of vibration (up to 100 hours)	6 g
Maximum acceleration, single shocks (up to 10 shocks)	500 g

*At frequency of 50 cps.

Note: Characteristics of tube the same as for the 6K4P.

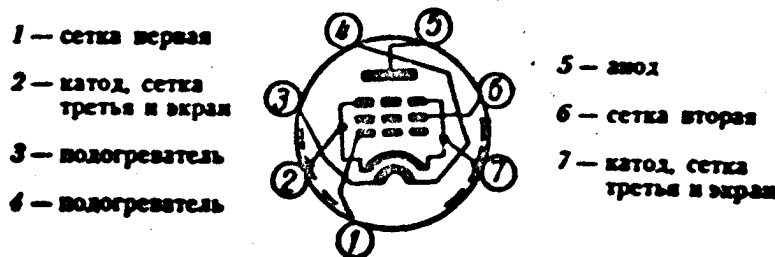
(Above material published April 1959, PKB, Sheet 1)

LONG-LIFE REMOTE-CUTOFF RADIO-FREQUENCY PENTODE 6K4P-Ye

Basic function radio-frequency voltage amplification.Construction glass miniature.General Data

Cathode — oxide-coated heater-type
 Maximum height
 Maximum diameter
 Number of pins
 Dimension drawing — 7P

62 mm
 19 mm
 7

Connection Diagram for Electrodes and Pins

1) First grid; 2) cathode, suppressor, and shield; 3) heater;
 4) heater; 5) plate; 6) screen; 7) cathode, suppressor, and shield.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	300 ± 15 ma
Plate voltage (=)	250 v
Screen voltage (=)	100 v
Resistance in plate circuit, automatic bias [sic]	68 ohms
Plate current	10 ± 3 ma
Screen current	no more than 5.5 ma
Transconductance	4.4 ± 0.9 ma/v
Transconductance for heater voltage of 5.7 v	no less than 3 ma/v
Transconductance for first-grid voltage of -20 v	40 μa/v
Internal resistance	no less than 0.45 megohm
Input resistance at frequency of 60 Mc	5 kohm
Equivalent internal noise resistance	3.5 kohm

(Above material published April 1959, PKB, Sheet 1)

LONG-LIFE REMOTE-CUTOFF RADIO-FREQUENCY PENTODE 6K4P-Ye

Negative first-grid voltage with electrode current in the grid circuit of 0.5 μ a	no more than 1.5 v
First-grid back current*	no more than 0.3 μ a
Cathode-heater insulation resistance	no less than 10 megohm
First-grid- (cathode + heater) insulation resistance**	no less than 500 megohm
First-grid- (screen + plate) insulation resistance***	no less than 500 megohm
Service life	no less than 5000 hours
Service-life criteria:	
transconductance	no less than 2.8 ma/v
first-grid back current	no more than 1 μ a
variation in transconductance from initial value	no more than +35% -30%

*At frequency of 60 Mc.

**For first-grid voltage of 100 v. Plate and screen not connected.

***For first-grid voltage of 200 v. Cathode and heater not connected.

Interelectrode Capacitances

Input	6.4 + 0.8 μ f
Output	6.7 + 1.1 μ f
Transfer	no more than 0.0035 μ f
Between cathode and heater	5.5 μ f

Maximum Permissible Operating Data

Maximum heater voltage { ~ or = }*	6.6 v
Minimum heater voltage { ~ or = }*	6 v
Maximum plate voltage (=)	300 v
Maximum screen voltage	125 v
Maximum plate power dissipation	3 watts
Maximum screen power dissipation	0.6 watt
Maximum cathode current	20 ma
Maximum voltage between cathode and heater	90 v
Maximum resistance in first-grid circuit	0.5 megohm
Maximum cathode warm-up time	30 sec
Maximum envelope temperature	140°C

*With tube in service for 500-hour period, the maximum permissible values for these constants are the same for the 6K4P.

(Above material published April 1959, PKB, Sheet 1)

LONG-LIFE REMOTE-CUTOFF RADIO-FREQUENCY PENTODE 6K4P-Ye

Maximum envelope temperature with tube in service
for 500-hour period 160°C

Resistance to External Effects

Minimum atmospheric pressure	20 mm Hg
Maximum centrifugal acceleration	100 g
Maximum acceleration:	
for brief-duration vibration	10 g
for extended vibration (up to 100 hours)	6 g
Maximum acceleration, single shocks (up to 10 shocks)	500 g

Note: Characteristics of tube the same as for the 6K4P.

(Above material published April 1959, PKB, Sheet 1)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE 6K7

Basic function radio-frequency voltage amplification.Construction metal.General Data

Cathode — oxide-coated heater-type

Maximum height

80 mm

Maximum diameter

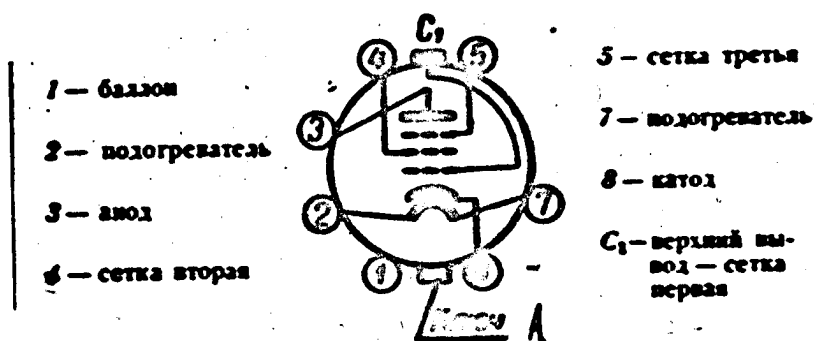
33 mm

Maximum weight

44 grams

Base — octal, Type Ts1-1-7A

Working position — any

Connection Diagram for Electrodes and Pins

- 1) Envelope; 2) heater; 3) plate; 4) screen; 5) suppressor;
7) heater; 8) cathode; C₁) top lead — control grid; A) Key.

Electrical Data

Heater voltage (~ or =)	6.3 v
Heater current	300 ± 25 ma
Plate voltage (=)	250 v
Suppressor voltage (=)	0 v
Screen voltage (=)	100 v
First-grid voltage (=)	-3 v
Plate current	7 ± 2.1 ma
Screen current	1.65 ± 0.75 ma
Transconductance	1.45 ± 0.25 ma/v
Transconductance for heater voltage of 5.7 v	no less than 1 ma/v
Transconductance for first-grid voltage of -35 v	15.5 ± 14.5 μa/v
Internal resistance	1 megohm

(Above material published April 1959, PKB, Sheet 1)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE .6K7

First-grid back current*	no more than 1 μ a
Cathode emission current**	no less than 45 ma
Leakage current between cathode and heater	no more than 20 μ a
Cathode warm-up time	15 sec
First-grid insulation resistance	no less than 20 megohm
Plate insulation resistance	no less than 20 megohm
Service life	500 hours
Service-life criteria:	
transconductance	no less than 0.95 ma/v
first-grid back current*	no more than 2 μ a
*For resistance in first-grid circuit of no more than 0.1 megohm.	
**With 30 volts on plate, first-grid, screen, suppressor.	

Interelectrode Capacitances

Input	7 $\pm$ 1.2 μ f
Output	12 $\pm$ 3 μ f
Transfer	no more than 0.005 μ f

Maximum Permissible Operating Data

Maximum heater voltage ($\sim$ or $=$)	7 v
Minimum heater voltage ($\sim$ or $=$)	5.7 v
Maximum plate voltage ($=$)	330 v
Maximum screen voltage ($=$)	140 v
Maximum plate power dissipation	3 watts
Maximum screen power dissipation	0.4 watt
Maximum voltage between cathode and heater ($=$)	100 v

← Change introduced.

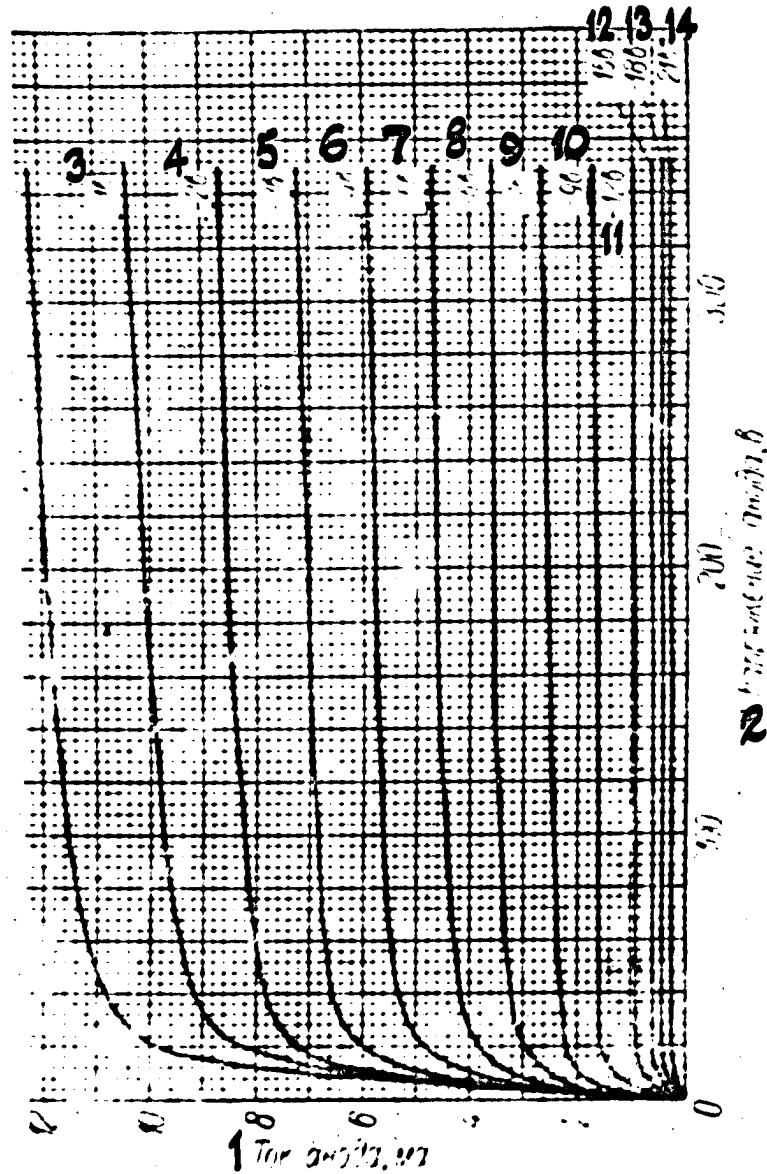
(Above material published April 1959, PKB, Sheet 1)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K7

Average Plate Curves

Heater voltage, 6.3 v; screen voltage, 100 v; suppressor voltage, 0 v.



1) Plate current, ma; 2) plate voltage, v; 3) -1 v; 4) -2 v; 5) -3 v; 6) -4 v; 7) -5 v; 8) -6 v; 9) -7 v; 10) -9 v; 11) -12 v; 12) -15 v; 13) -18 v; 14) -21 v.

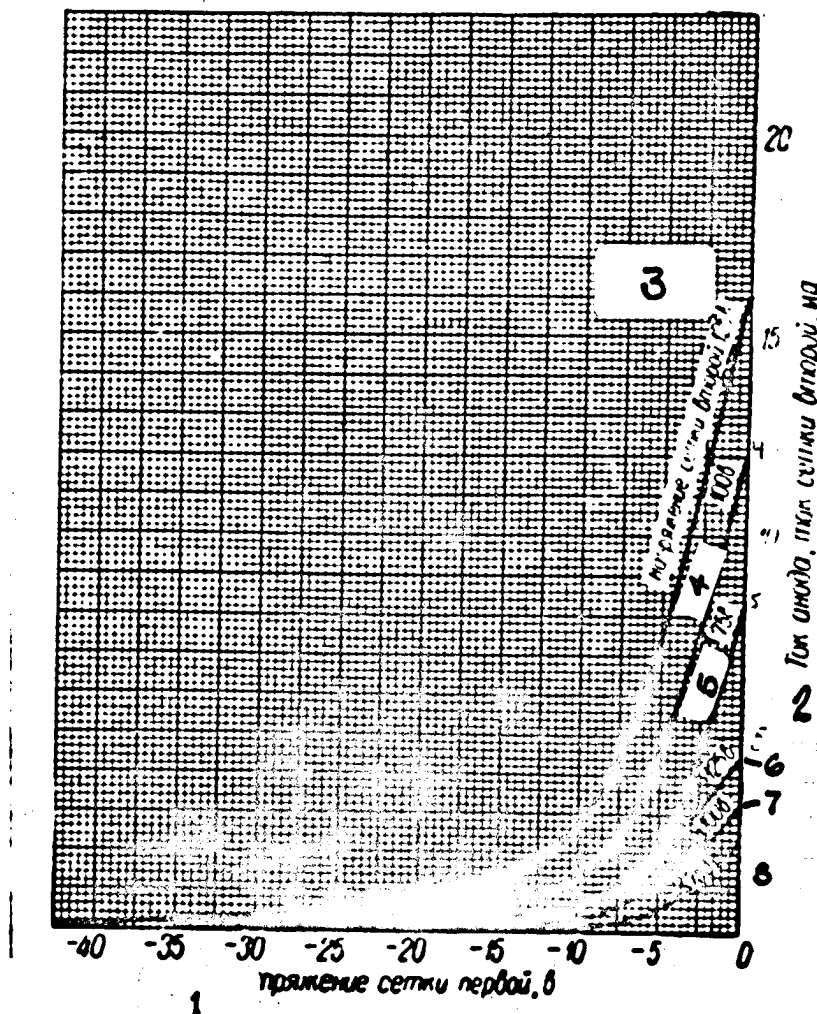
(Above material published April 1959, PKB, G-1)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K7

Average Characteristics

— Plate-grid; ----- grid (for screen grid); heater voltage, 6.3 v; plate voltage, 250 v; suppressor voltage, 0 v.



- 1) First-grid voltage, v; 2) plate current, screen current, ma;
 3) screen voltage, 125 v; 4) 100 v; 5) 75 v; 6) 125 v; 7) 100 v;
 8) 75 v.

(Above material published April 1959, PKB, G-3)

REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

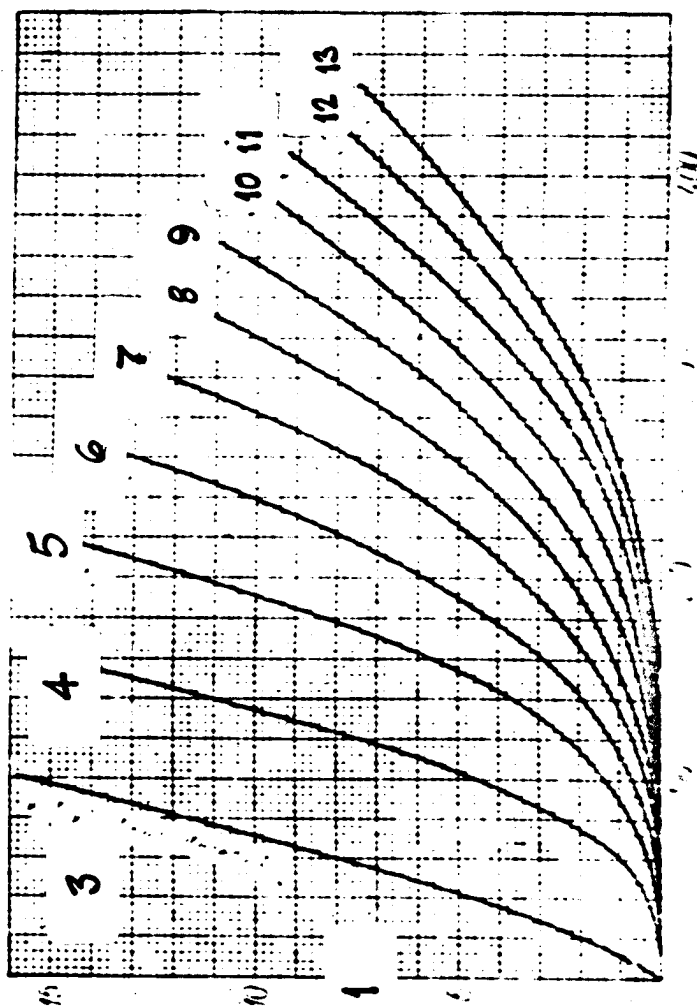
6K7

50X1-HUM

Average Plate Curves

(triode connection: screen and suppressor connected to plate)

Heater voltage, 6.3 v.



1) Plate current, ma; 2) plate voltage, v; 3) first-grid voltage, 0.6 v;
 4) -6 v; 5) -12 v; 6) -18 v; 7) -24 v; 8) -30 v; 9) -36 v; 10) -42 v;
 11) -48 v; 12) -54 v; 13) -60 v.

(Above material published April 1959, PKB, G-5)

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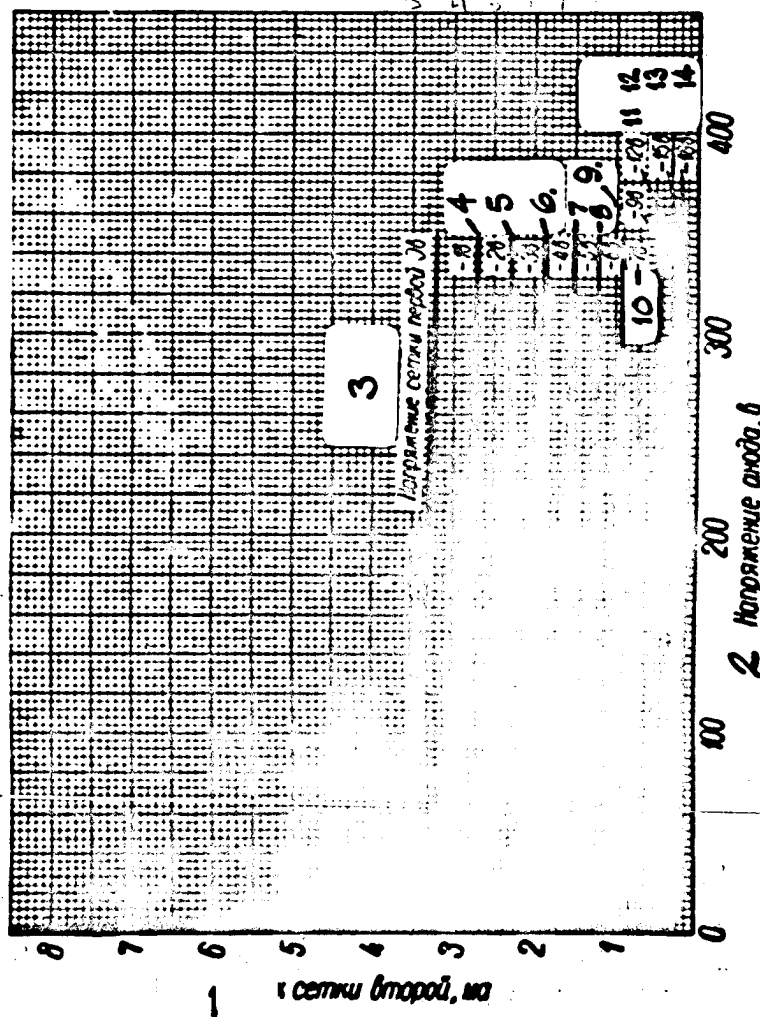
50X1-HUM

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REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K7

50X1-HUM

Average Grid-Plate Curves

1) Screen current, ma; 2) plate voltage, v; 3) first-grid voltage, 0 v; 4) -1 v; 5) -2 v; 6) -3 v; 7) -4 v; 8) -5 v; 9) -6 v; 10) -7 v; 11) -9 v; 12) -12 v; 13) -15 v; 14) -18 v.

(Above material published April 1959, PKB, G-2)

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50X1-HUM

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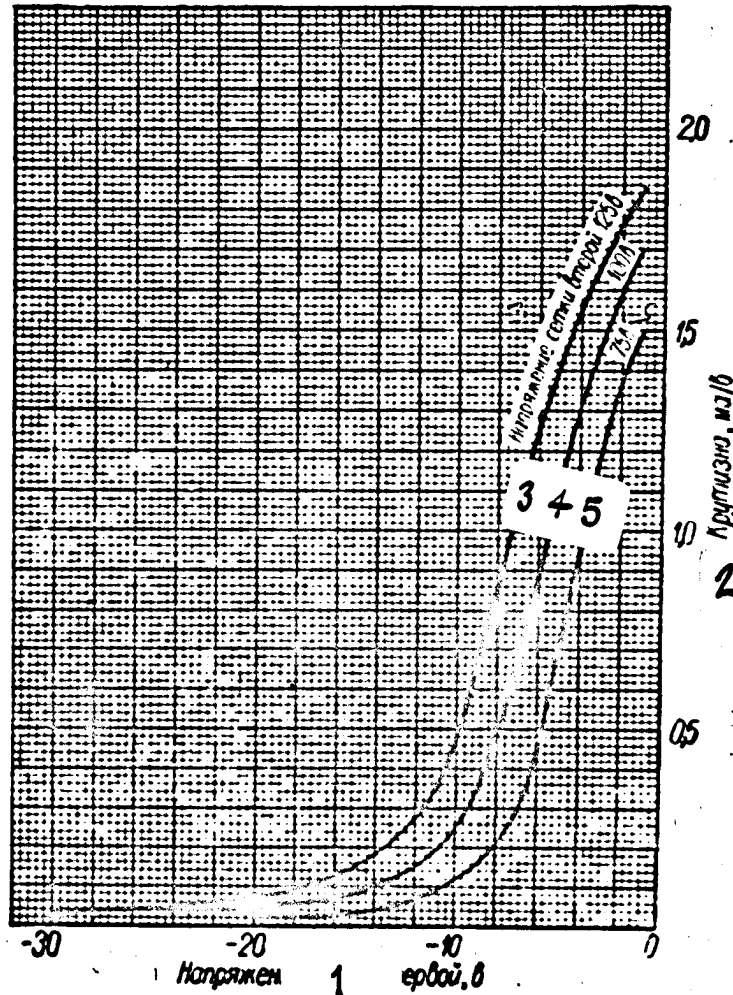
REMOTE-CUTOFF RADIO-FREQUENCY PENTODE

6K7

50X1-HUM

Average Curves for Mutual Conductance as a Function of First-Grid Voltage

Heater voltage, 6.3 v; plate voltage, 250 v; suppressor voltage, 0 v.



1) First-grid voltage, v; 2) mutual conductance, ma/v; 3) screen voltage, 125 v; 4) 100 v; 5) 75 v.

(Above material published April 1959, PKB, G-4)

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50X1-HUM

50X1-HUM

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